

**The Annual Report
of the
Recycling Public Advisory Council**



**Presented to the
Honorable Jack Markell, Governor of Delaware
and the
147th Delaware General Assembly**

**November 2014
(Thirteenth Edition)**

The Annual Report of the Recycling Public Advisory Council

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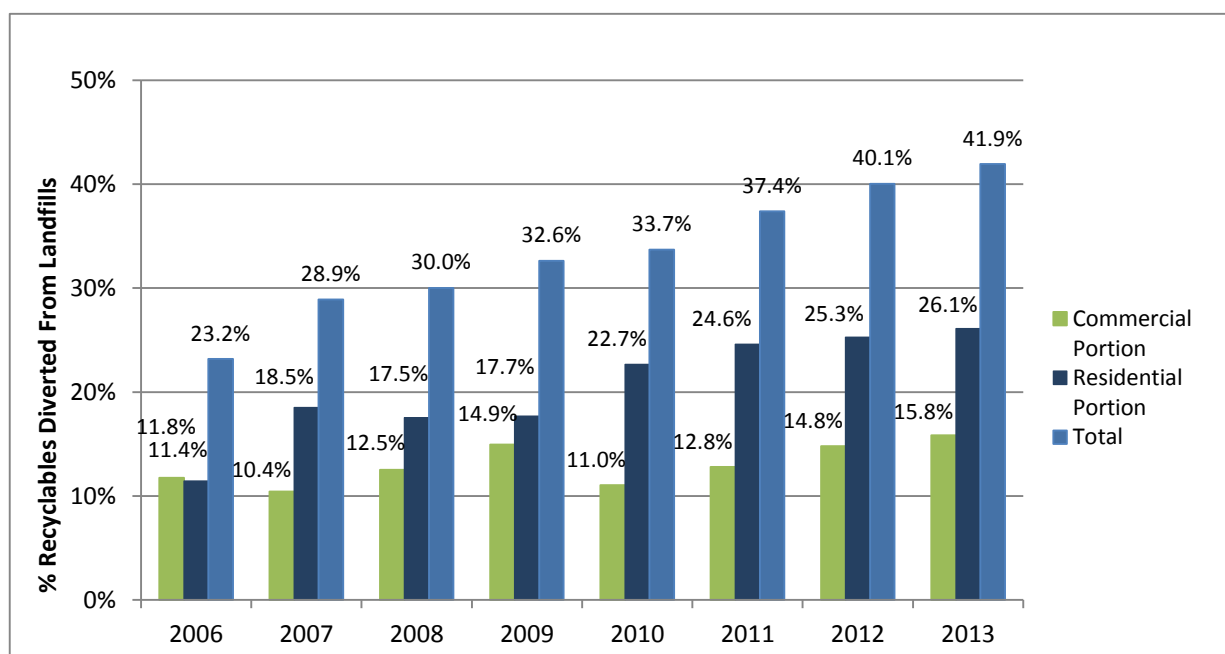
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Executive Summary

Delaware has created an environment that is increasingly supportive of recycling activities. On January 1, 2014 the final implementation phase of the Universal Recycling Law went into effect requiring that all commercial businesses actively participate in a comprehensive recycling program. With the two new Material Recovery Facilities (MRFs) that began operations in 2013 Delaware can easily process our own source separated recyclables. We are turning more of our waste into a resource and simultaneously driving valuable sustainable domestic industry as a result. Two clear examples of this are the ninety (90) jobs created at the Re-Community Materials Recovery Facility and the twenty five (25) jobs created at the Revolution Recovery construction and demolition waste recovery facility at the DSWA Delaware Recycling Center in New Castle, DE. Although the exact count is unknown, there are also additional indirect jobs created as a result of this waste processing activity.

Figure 1. Percentage of recyclables diverted from landfills in Delaware, CY2006-2013.



Notes: 1. The green and dark blue columns represent the commercial and residential percentage of the recyclables diverted from disposal. For the individual commercial and residential diversion rates, 35.6% and 47.1% respectively, see Table 3.

2. The light blue column is the total diversion rate of all residential and commercial recyclables since 2006.

There are many benefits to recycling which are often touted and occasionally debated. However, there is one impact which most people support and that must be acknowledged here: through a difficult period of economic recession, our recycling policies in Delaware have created significant investments in new industry and new jobs. In the most recent study of Delaware's recycling, reuse, and remanufacturing industry, recycling activities were estimated to have a **\$346 million** direct positive impact on our State's annual economy in CY2009. There have not

been any subsequent studies but the economic contribution of these activities has undoubtedly continued to grow.

The Recycling Public Advisory Council (RPAC) has 16 Members representing diverse interests and has met regularly since the last report in November 2013. In addition to supporting and reporting on recycling activities, the RPAC has diligently worked with all stakeholders to help implement the requirements of the Universal Recycling Law in the timeframes required. A more detailed discussion of these efforts follows. This report covers recycling activities since November 2013 and recycling measurement for calendar year 2013.

Recycling Legislation

Since the signing of the Universal Recycling Law in June of 2010, the RPAC has focused upon the implementation of the many elements of this law. The first major milestone of this law was single-family residential recycling, which was fully implemented by September 15, 2011. The next milestone was multi-family residential recycling, which was implemented on January 1, 2013. The final component of this law is recycling in the commercial sector, which was implemented on January 1, 2014. A report describing the implementation plan for commercial recycling was issued by the RPAC in November 2012. RPAC continues to focus on the implementation of commercial recycling as expanding that diversion rate will be necessary to meet the states 2015 and 2020 diversion goals.

Recycling Grants and Loans Program

The RPAC has worked with the Department of Natural Resources and Environmental Control (DNREC) to develop grant and loan guidelines as required by the Universal Recycling Law. The following table summarizes the grant and loan activity to date:

Grant & Loan Cycle	Area of Emphasis	Successful Applicants	Funding Expended
1	Single-Family Residential	22	\$4,688,262.96
2	Multi-Family Residential	8	\$292,954.98
3	Commercial	15	\$1,295,408.04
4	Commercial, Non-profit, Education	14	\$365,866.50*
5	Education	8	\$97,670*
Special Yard Waste Grant	Yard Waste Sites	1	\$482,000
Grand Total		67	\$7,222,162.48

*Denotes funds awarded/encumbered but actual expenditures cannot be determined until the end of the contract term.

Outreach and Education

The RPAC believes that efforts to increase the awareness and benefits of recycling are critical to improving how waste is managed in Delaware. Therefore, the RPAC has worked with the DNREC and the DSWA to develop and implement outreach efforts. This has included such items as radio ads encouraging recycling, public meetings, billboards, and a how-to guide to inform individuals on what and how to recycle.

Recycling Diversion

The RPAC has used the same methods to calculate recycling rates in Delaware since 2006. The methodology is objective, scientific, auditable, and consistent with the U.S. Environmental Protection Agency's (EPA) guidelines. A summary of the recycling rates produced using this methodology since 2006 is shown in Table 1 below:

Table 1. Recycling Rate Summary, CY 2006-2013.

	Calendar Year							
	2006	2007	2008	2009	2010	2011	2012	2013
Diverted Recyclables	23.2%	28.9%	30.0%	32.6%	33.7%	37.4%	40.1%	41.9%
Major Milestones¹	Executive Order re-establishes RPAC. Two separate reports recommend comprehensive recycling	Wilmington implements curbside recycling citywide	Cherry Island yard waste ban. DSWA offers Single Stream	Some private haulers begin offering curbside recycling	Universal Recycling signed into law	Central & Southern Yard Waste bans take effect.	First full year of single-family, single-stream	First full year of multi-family single-stream

¹For detailed explanations of Delaware's major recycling milestones see "Appendix E. Background of Recycling Efforts in Delaware"

It is important to note that the impact of the commercial component of Universal Recycling, which was implemented on January 1, 2014, on the overall diversion rate will not be known or reported until late 2015. With a statewide recycling rate of nearly 42% for Calendar Year 2013 and the full impact of the Universal Recycling Law still to come; it is not clear if Delaware is on track to meet the goal of 50% diversion of MSW by 2015.

It is also worthy of note that the new construction and demolition recycling center, "Revolution Recovery" is contributing significantly to our progress towards Delaware's Total Solid Waste diversion goal of 72% by 2015, but that this activity is not considered MSW per the EPA recycling guidelines and does not affect the MSW diversion rates.

Recommendations

The RPAC's recommendations to Governor Markell and the General Assembly include steps they can take to increase the recyclables diversion rate:

- 1. Provide RPAC the discretion to fund those purposes specifically identified in the original Universal Recycling Legislation (7 Del. C. Chapter 60, Subchapter III, Solid Waste Recycling).** In order to meet the diversion goals established under the Universal Recycling Law, the RPAC estimates all of the funds from bottle fees will be required. Do not divert further funds from the Delaware Recycling Fund without RPAC recommendations.
- 2. Lead by example - require recycling in all state government facilities, including public schools and libraries, the courts system, and the legislature.** Many of these facilities are believed to lack effective recycling programs. With the commercial recycling requirement in effect January 1, 2014 and with these government offices falling under the jurisdiction of the commercial recycling requirement, appropriate measures should be taken as necessary to ensure recycling is provided at all of these facilities. The status of recycling in executive branch offices under Executive Order 18 should be measured.
- 3. Support business organizations and local government's efforts to expand recycling.** Although the commercial recycling requirement has only been in effect for eleven months, the available data suggests this sector has a lot of room for improvement. This statement is made based on historical waste characterization data and a notably lower diversion rate than in the residential sector. Therefore, it is important to continue to provide resources and support efforts to recycle in all commercial sectors.
- 4. Seek to strengthen food waste diversion.** Encourage DNREC and DSWA to investigate and collaborate on solutions that will result in viable long term food waste diversion alternatives in northern Delaware. Food waste is a significant and valuable part of the waste stream comprising up to 18% of landfill waste. The closing of the Peninsula Composting facility will immediately result in a one percent reduction in the state's total diversion rate as well as eliminate the potential for any additional increase in food waste diversion in the near term. This will have a direct impact on meeting the state's established diversion goals.
- 5. Funding -** On December 1, 2014, the Recycling Fee of \$.04 per bottle will sunset. However, with the end of this Fund, comes the end of an on-going revenue source for DNREC's support of recycling programs and the overall implementation and evaluation of universal recycling. Action is required by the General Assembly to ensure that future funding exists to fund DNREC's support, oversight and administration of the universal recycling law.
- 6. Support recycling outreach and educational efforts in Delaware.** There still is a need to help Delawareans understand how to recycle, opportunities for various materials, and the benefits of recycling from both the residential and commercial sectors.

1.0 Purpose

This is the Annual Report of the Recycling Public Advisory Council (RPAC). The purpose of the report is to fulfill requirements of 7 Del. C., §6058, which directs the RPAC to prepare an annual report addressing the following:

1. The status of attainment of the recycling goals specified in 7 Del. C., §6056;
2. An accounting of the recycling grants and loans programs and recommendations for future funding of the programs;
3. An assessment of the activities of both the DNREC and the Delaware Solid Waste Authority (DSWA) in achieving the goals specified in 7 Del. C., §6056;
4. An objective, auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste; and
5. Such other recommendations as the RPAC shall deem appropriate.

The Solid Waste Recycling Law (the Universal Recycling Law) is attached to this report as Appendix A. A list of the current RPAC members can be found in Appendix B.

2.0 Background

2.1 Benefits of Recycling

There is more to recycling than feeling good about the environment. It also has tremendous economic value. Recycling:

- **Provides over 10 times more jobs than landfilling¹**
- **Creates local industry**
- **Extends the useful life of municipal landfills**
- **Reduces emissions of greenhouse gases**
- **Saves energy**
- **Conserves natural resources**
- **Reduces environmental damage from industrial, residential, and commercial waste**
- **Teaches environmental stewardship to individuals, business and government**

For further detail and supporting documentation please reference [*The Sixth Annual Report of the Recycling Public Advisory Council*](#), visit the RPAC website (<http://www.dnrec.delaware.gov/dwhs/Info/Pages/RPAC.aspx>), or contact the Division of Waste and Hazardous Substances, Solid & Hazardous Waste Management Section (see cover sheet).

The Northeast Recycling Council, Inc. (NERC) produced the [*Recycling Economic Information Study Update: Delaware, Maine, Massachusetts, New York, and Pennsylvania*](#) in February 2009. This report and its last two iterations are available on NERC's website, www.nerc.org. An important note is that the Delaware recycling, reuse, and remanufacturing industry has a \$346 million direct positive impact on our State's annual economy - and this number is growing.

2.2 Recent Recycling Efforts in Delaware

The State of Delaware has been promoting recycling since 1975, and a more extensive history of those efforts can be found in Appendix E. The following is a summary of recent recycling efforts.

Effective January 1, 2014 the requirement for all commercial businesses to actively participate in a comprehensive recycling program took effect. The impact this will have on the states diversion rate will not be known until late calendar year 2015 once the recyclables reporting data has been collected and analyzed.

¹See [*A Scenario for Resource Management in the State of Delaware*](#)

Grants - The fourth and fifth cycle of the Universal Recycling Grant and Low Interest Loan Program were made available in November of 2013 and August of 2014 respectively. Between both grant cycles a total of 22 applicants were selected for over \$460,000 in recycling grant funding. For more details see Table 7 and the following paragraph in Section 5.

Outreach – From November 2, 2013 to October 29, 2014 DNREC held thirty three outreach and education training events throughout the state in reference to grant opportunities, the implementation of commercial recycling, and general recycling outreach and education. DNREC also held twelve free waste assessments performed at individual businesses to assist these businesses with identifying the recyclable materials they generate and best way to manage them both in terms of diversion and cost. For a detailed list of these events see Table 8 in section 6 of this report. DNREC and DSWA, with input from RPAC have also recently issued the third edition of “[*How to Recycle – A Guide To Recycling In Delaware.*](#)”

Revolution Recovery – On September 26, 2014 Revolution Recovery, a Philadelphia based company which processes and markets construction and demolition (C&D) waste such as wood, drywall, metal, and carpet held its opening ceremony for their new sorting line, which was in part funded by the universal recycling grant and loan program, at the DSWA’s Delaware Recycling Center in New Castle Delaware. All of the sorted and baled material is then sent to different facilities/markets to be recycled into new products.

Peninsula Composting – is a large food and yard waste composting facility located near the Port of Wilmington. Pursuant to substantial complaints from the local communities regarding odors generated by Peninsula Composting, near uniform political opposition to the continuation of composting operations, and failure to comply with DNREC requirements to address the odor issues, on October 20, 2014 Peninsula Composting was issued a Secretary’s Order by DNREC requiring the cessation of waste acceptance and the completion of site closure activities no later than March 31, 2015. While it is agreed by all that the odor issues created by this facility had to be addressed, the closure of Peninsula Composting results in a substantial impact to Delaware, as well as, regional food waste diversion efforts. In the absence of a location to manage northern Delaware food waste by means other than landfill disposal, there will be an immediate one percent reduction in the states diversion as well as the loss of opportunity to divert substantially more of the food waste headed for the landfill in coming years. For this reason it is important for Delaware to place priority on the establishment of an organics management facility that can address northern Delaware’s food waste generation.

3.0 RPAC Activities

RPAC continues to primarily focus its efforts on implementation of the Universal Recycling Law. This includes providing recycling grant and loan guidance, improving recycling guidance and toolkits for residents and businesses, and continuing with measurement and reporting of the amount and percent diversion of recyclables from Delaware landfills.

3.1 Measurement and Reporting

Prior to the reinstitution of the current RPAC, a Measurement and Methodology Subcommittee developed a methodology for measuring recycling diversion rates based upon EPA guidelines. This methodology provides an objective and auditable approach to recycling measurement which was relevant and repeatable. The Subcommittee's name was subsequently changed to "Measurement and Reporting" but their work continues in the current RPAC and has resulted in the eighth Recycling Measurement Report (included as section 4.0 of this report). Most importantly, these Recycling Measurement Reports establish a uniformly accepted approach that will make past, present, and future recycling measurements consistent and comparable.

The RPAC and DNREC have developed guidelines for the recycling industry to report information as directed by the Universal Recycling Law (7 Del. C., §6056). To help protect proprietary business information, the RPAC has been using a consultant to collect recycling data. Because reporting on commercial recycling activities was not previously obligatory, the Recycling Measurement Report was limited to voluntary surveys. The new, legally required reporting system will generate a fuller and more accurate spectrum of data, and will result in a better overall measurement of recycling in Delaware. The first reporting year with the new data collection was 2011, which means this is only the second report with a full year's worth of data from the required industry reporting. This data reflects the impact of implementation in both the single-family and multi-family components of universal recycling implementation.

3.2 Recycling Markets

Paul Bickhart (RPAC Member representing the recycling industry) and Michael Parkowski (RPAC Member representing DSWA) have key industry contacts providing information on the sale of collected recyclables. They have educated the RPAC on the status of recycling markets to better understand current industry circumstances. In late 2008, the markets for recycled commodities declined sharply in response to the national and global economies. Later in 2009 prices very slowly started to improve. The outlook continued to be positive into 2010, and was relatively strong and stable in 2011. Prices generally declined for some commodities and remained flat for others in 2012. In 2013, and now 2014, the overall recycling markets have been relatively flat with little price movement up or down and on the low side of historical trends due to the weak global economy. Consumers of recyclable materials continue to place strong emphasis on material cleanliness and have a low tolerance for contamination. Delaware is well suited to meet these demands with the modern separation infrastructure that has recently been

constructed. Another market development is the increasing cost of managing electronic wastes due to the decline in demand for the leaded glass found in Cathode Ray Tube (CRT) wastes. These added costs have required DSWA to modify their management of this waste stream. For more information visit http://www.dswa.com/programs_electronic.asp

3.3 Outreach

The RPAC, DNREC, and the DSWA continue to coordinate on the education of the public regarding the transition into universal curbside recycling, commercial sector recycling, improved yard waste diversion, the transition out of beverage container deposits, recycling industry reporting requirements, and the availability of the recycling grant and loan program. Educating the public is of very high importance to the RPAC and a necessary part of any successful program. Citizens might not know why they should recycle or how to participate. The RPAC provides advice and guidance to DNREC and the DSWA regarding their outreach and education efforts. While the RPAC does not provide recycling services, their input on this subject assists in the facilitation and encouragement of recycling amongst the state's citizenry. DNREC and DSWA specific outreach efforts are described in Section 6, Section 7, and Appendix D.

3.4 Other Activities

The RPAC is committed to helping Delawareans realize and implement better waste management practices. Regular RPAC meetings provide insight into a variety of topics. Most discussions and presentations over the past year continue to focus on the implementation of the Universal Recycling Law. As required in the Universal Recycling Law, RPAC submitted a report entitled "Recommendations for Implementing Universal Recycling in Delaware's Commercial Sector" to the Governor and the General Assembly, concurrent with the 11th edition of this report, in November 2012. That report includes a Frequently Asked Questions (FAQ) section, as well as a series of commercial recycling 'toolkits' to help various types of commercial entities (such as office buildings, restaurants, hotels, and supermarkets) comply with the Universal Recycling Law. With the requirement to implement the commercial component of Universal Recycling only taking effect January 1, 2014, the impact those efforts will have on the actual diversion rate will not be known until the fall of 2015 when 2014 data can be captured. With little change in the commercial sector diversion rate over the last year, significant effort is likely needed to advance recycling in this sector.

RPAC continues to significantly contribute to the Universal Recycling Grant and Low-Interest Loan Program by reviewing and scoring grant applications. With DNREC's assistance the RPAC also continues to track recycling fee revenue. The revenues raised by the recycling fee have been consistently lower than initial projections. At current rates, the total amount collected by the end of the fee program on December 1, 2014 will be about \$14 million, or 64% of the original \$22 million projected.

RPAC also issued a letter to the Members of the 146th General Assembly enumerating several reasons why the legislature should consider requiring DNREC to close the Polly Drummond yard waste demonstration site. The letter cited substantive costs to maintain the site, impact to DNREC grant funds, statewide equity, and the fact that the site negatively impacts private management of this waste stream as sound reasons for closure.

The RPAC would also like to recognize and thank Basil Kolas representing the State of Delaware Chamber of Commerce and Carrie Leishman representing the Delaware Restaurant Industry for their service to the Recycling Public Advisory Council. Their replacements are and we welcome, Brian Nixon of Invista representing the State of Delaware Chamber of Commerce and Adam Webster of Grotto Pizza representing the Delaware Restaurant Industry.

4.0 Recycling Measurement Report

Originally under Executive Order 90, the RPAC had been directed to use the U.S. EPA's definitions of "recycling" and "municipal solid waste" and also to develop an "objective and auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste." In response to this directive, the RPAC created the Measurement and Reporting Subcommittee (M&R Subcommittee) comprising members of the RPAC, DSWA, DNREC, and the community. Pursuant to this directive, the M&R Subcommittee produced a methodology which was developed via an open and transparent process, recorded in such a way that it could be easily understood by members of the general public, and which was fully endorsed by each organization represented on the Council. This methodology has been consistently employed by the RPAC to analyze recycling data since CY2006 so that meaningful trends and comparisons could be established. The M&R Subcommittee has continued to employ this methodology under the new Universal Recycling Law.

4.1 Data Collection

The M&R Subcommittee obtained data from DSM Environmental Services, Inc. (DSM) for CY2013. Their report, *State of Delaware Assessment of Municipal Solid Waste Recycling for Calendar Year 2013*, is excerpted in Appendix C. In previous reports, DSM had collected data on recyclable materials collected by private industry in Delaware, while DSWA collected its own data and reported numbers directly to the RPAC. The RPAC then calculated commercial and residential waste disposal and recycling estimates using both data sets. Starting with calendar year 2011 data, DSM has collected data from both the DSWA and from private industry, and calculated recycling rates using methodology consistent with the M&R Subcommittee's previous efforts.

Calendar year 2013 represents the third year that private industry was required to report on recycling activity, per the Universal Recycling Law. While reporting has notably improved as a result of this requirement, DNREC and DSM continue to work with and pursue non-reporters who are believed to have valuable recyclables generation data which is critical to calculating the most accurate diversion rate possible.

The RPAC and DSM have worked to ensure that the methodology for data gathering is consistent with EPA guidelines and that there is no double counting of recycling activities. The survey work by DSM was funded by the DSWA for CY 2013, but program management has been the responsibility of the RPAC.

4.2 Diversion Rate Calculation

The waste stream can be broken down into two primary categories: Municipal Solid Waste (MSW) and non-MSW. Put simply, MSW is what most of us think of when we think of "trash" - even though it contains a high percentage of valuable resources. The EPA's guidance for calculating recycling rates limits "recycling" to the category of MSW. Additional detail

regarding definitions of recycling can be found in RPAC's 2006 Annual Report and in "Measuring Recycling: A Guide for State and Local Governments" (EPA-530-R-97-011).

Determining the percent diversion of recyclables from Delaware's solid waste stream involves the following calculation:

$$\text{Diversion rate of recyclables (\%)} = 100 \times \frac{\text{MSW recyclables, tons diverted}}{\text{MSW recyclables, tons diverted} + \text{MSW, tons disposed}}$$

The methodology developed by the RPAC calculates the percent of recyclables diverted from the MSW stream, as well as the total tonnage of MSW being landfilled. It also subdivides results into the residential and commercial sectors. These residential and commercial allocations were developed based upon comprehensive waste composition studies conducted in 2006 and 2007, the best judgment of DSM, and the best judgment of the members of the M&R Subcommittee.

Determining whether a material was generated by the commercial or residential sector can sometimes be difficult to resolve and is not always intuitive. Generally the EPA and the M&R Subcommittee allocate materials to the original 'generator' even though they may not be the one who actually performs the recycling. For example, lead acid battery recycling performed by a commercial battery retailer would be attributed 80% to the residential sector because approximately 80% of the batteries are generated from non-commercial vehicles. While this 'generator rule' can be debated, it is consistent with general EPA guidelines and has been applied consistently since 2006.

4.3 Recycling Rates

Since CY2006, the RPAC has employed an objective, scientific, and auditable methodology for calculating recycling rates in Delaware that is consistent with the U.S. EPA's guidelines. A summary of the recycling rates produced using the aforementioned methodology is shown in Table 2 below:

Table 2. Recycling Rates Summary, CY2006-2013.

	2006	2007	2008	2009	2010	2011	2012 ¹	2013
Diverted Recyclables (tons)	248,410	323,396	318,002	323,637	359,147	401,883	405,953	450,499
MSW Disposed	823,479	794,984	741,143	668,353	706,368	672,761	607,539	623,463
Total Municipal Solid Waste = Diverted Recyclables + MSW Disposed	1,071,889	1,118,380	1,059,145	991,990	1,065,515	1,074,644	1,013,492	1,073,962
Percent Diverted Recyclables	23.2%	28.9%	30.0%	32.6%	33.7%	37.4%	40.1%	41.9%
¹ Note that the 2012 MSW disposed total has been revised to reflect the 33,333 tons omitted in the 2012 report.								

Results comparing the residential to commercial sector rates for CY2012 & CY2013 are shown in Table 3 below. The residential recycling rate continues to be significantly higher than the commercial recycling rate in both years. It is important to understand that waste and recycling tonnages fluctuate on an annual basis for many reasons and due to a variety of influences such as the economy, recyclables markets and minor errors and omissions that may be discovered in subsequent reporting years. For example, even though the overall tonnage of commercial recyclables and MSW disposed is higher in CY2013 than in CY2012, the commercial diversion rate remains unchanged. What is important to note is that the commercial diversion rate significantly lags behind the residential diversion rate and the overall diversion rate. This indicates that additional effort is needed in diversion of commercial recyclables and perhaps further evaluation of how the commercial diversion rate is calculated.

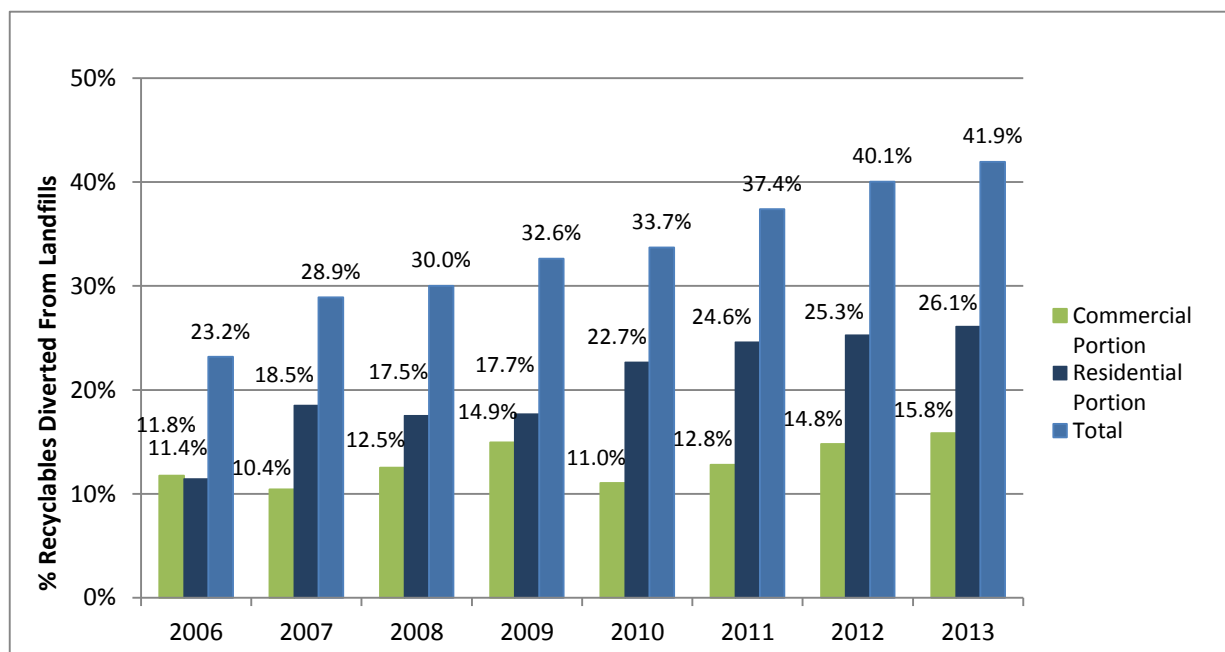
Table 3. Recycling Rates for Residential and Commercial Sectors, CY2012-2013.

	2012		2013	
	Residential	Commercial	Residential	Commercial
Diverted Recyclables (tons)	256,028	149,925	280,328	170,171
MSW Disposed	313,386 ¹	294,154 ¹	315,281	308,182
Total Municipal Solid Waste = Diverted Recyclables + MSW Disposed	569,414	444,079	595,609	478,353
Percent Diverted Recyclables	45.0%	33.8%	47.1%	35.6%
¹ Note that the 2012 MSW disposed total has been revised to reflect the 33,333 tons omitted in the 2012 report. Half the tonnage (16,667 tons) was assigned to commercial disposal and half was assigned to residential disposal. The diversion rates remain unchanged.				

4.4 Behind the Data – CY2013

Despite a questionable economy, CY2013 saw a continued increase in diverted recyclables versus previous years. The CY2013 statewide average diversion rate was 41.9%: a net increase of 1.8% since CY2012 (see Figure 2 below). This trend is expected to continue through CY2014, which will be the first full year under the Universal Recycling Law in which the implementation of comprehensive recycling programs are to take effect in the commercial sector. From 2010 (the year prior to the enactment of Universal Recycling) to 2013 the tonnage of diverted recyclables has increased by over 25% and is expected to continue to increase with the implementation of commercial recycling.

Figure 1. Percentage of recyclables diverted from landfills in Delaware, CY2006-2013.



Notes: 1. The green and dark blue columns represent the commercial and residential percentage of the recyclables diverted from disposal. For the individual commercial and residential diversion rates, 35.6% and 47.1% respectively, see Table 3.

2. The light blue column is the total diversion rate of all residential and commercial recyclables since 2006.

Figure 2. Total tons of MSW recycled or landfilled in Delaware, CY2006-2013.

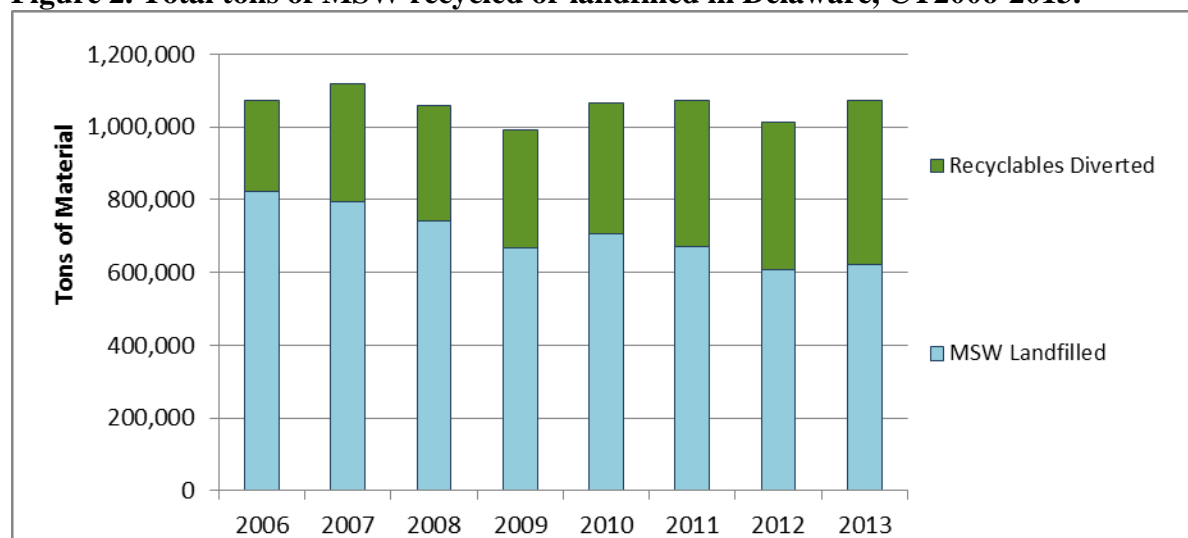
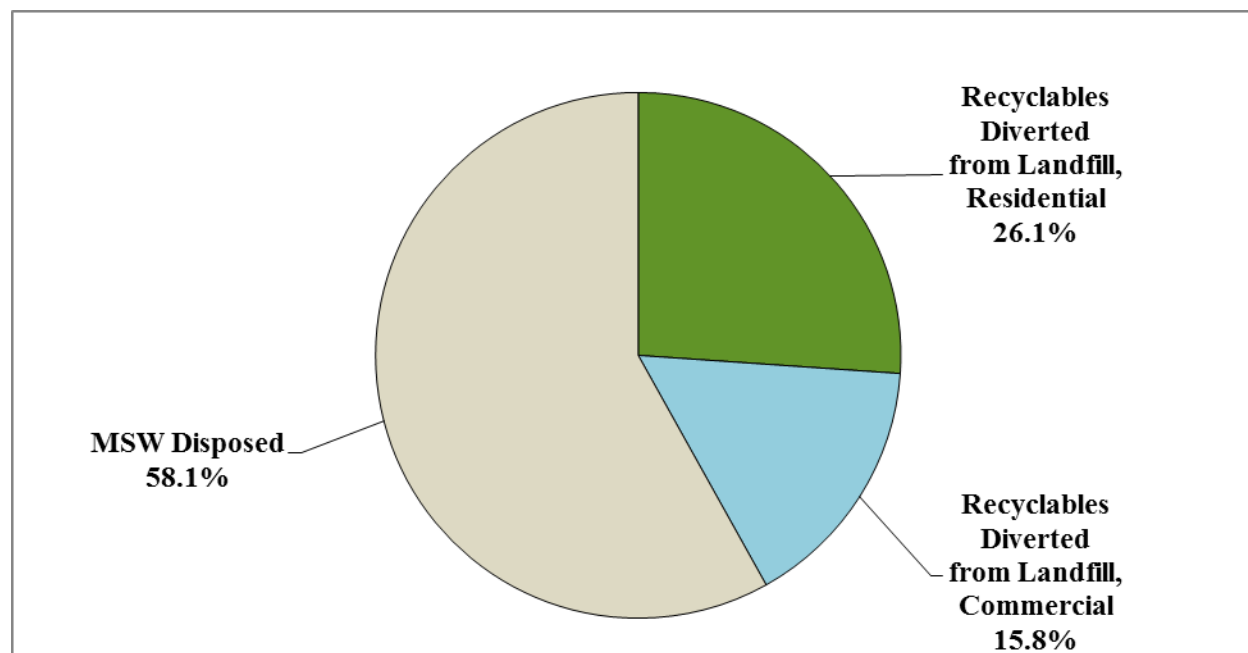


Figure 3 shows the percentage of residential and commercial recyclables diverted from landfilling in CY2013. The combined percentages of residential and commercial recyclables diverted equal the combined recycling rate of 41.2% for CY2013.

Figure 3. MSW Disposed and % Residential and Commercial recyclables in CY2013.



Results from CY2013 showed a marked increase in diverted residential recyclables, due to the full year of single-family of residential recycling. It's worth noting that since the implementation of Universal Recycling the single-stream diversion tonnage has more than doubled from the 2010 rate.

4.5 Status of the Recycling Goals

The passage of the Universal Recycling Law established diversion goals of 50% for MSW and 72% for all solid waste by 2015. The diversion rate of recyclables for CY2013 was 41.9% for the total MSW stream. To reach the goal of 50% by 2015 will require an increase in the 2014 recycling diversion rate of at least 8.1%. With commercial recycling beginning in 2014, it remains to be seen if this substantial increase in diversion will occur and January 1, 2015 goal will be reached. It is very likely additional measures will be required, including those described in Section 8 *Recommendations*, in order to achieve the established diversion goals.

By maintaining a consistent methodology for 7 years, the RPAC has been able to develop a reasonably accurate and meaningful trend line analysis for recycling progress in Delaware. Continuing with this consistent methodology will enable the accurate tracking of progress toward the state's goals and help to inform future policy decisions.

The RPAC has not yet established a methodology for collecting and analyzing data for the total waste stream. This is a very significant undertaking and the RPAC plans on approaching it with the same degree of thoughtfulness, thoroughness, and transparency employed for the development of the MSW methodology. DSWA has obtained the services of an experienced environmental consultant to estimate the CY2013 total solid waste diversion rate but that data is not yet available. Also DSWA is planning a second statewide comprehensive waste

characterization study for CY2014. This study will allow us to further refine our measurements and methodology for MSW, but it will be requisite in order to develop the methodology and calculate the state's diversion of the Total Solid Waste (TSW) stream.

The RPAC may recommend additional mechanisms to improve solid waste diversion in Delaware after the TSW data and DSWA Waste characterization study are complete.

5.0 Recycling Grants and Loans Program

The Universal Recycling Law establishes the Recycling Grants and Low Interest Loan Program (7 Del. C., §6054 and 7 Del. C., §6055). This program is designed to help implement:

- (1) Recyclables collection programs (especially residential programs); and
- (2) Other recycling initiatives (especially the recycling of commercial waste).

DNREC began the Recycling Grants and Low Interest Loan Program (the Program) in calendar year 2011 and will offer it at least annually until these funds are depleted. The RPAC has assisted DNREC in developing the Guidelines for each of the five cycles of the Program.

The application deadline for the first cycle of the Program was January 24, 2011. Funding criteria for this round prioritized startup costs for single-stream, curbside recycling programs. The first cycle primarily funded the purchase of recycling carts, collection trucks and related equipment, and outreach expenses. Most of the awardees were municipalities and waste haulers. Entities that applied, were awarded, and accepted funding during the first cycle are included in Table 4.

Table 4. Entities Funded During the First Grant Cycle.

Applicant	Funding
Bethany Beach	\$ 250,377.00
City of Dover	\$ 101,151.00
City of Lewes	\$ 118,830.00
City of New Castle	\$ 24,220.00
City of Newark	\$ 212,063.00
City of Rehoboth	\$ 40,187.00
City of Wilmington	\$ 657,320.00
Delaware City	\$ 29,130.00
DE Restaurant Association	\$ 12,470.00
Delaware Sanitation	\$ 301,662.00
Econo-Haul	\$ 983,075.00
Fenwick Island	\$ 10,920.00
First State Disposal	\$ 201,053.00
Hockessin Sanitation	\$ 101,831.00
Jay D C Enterprises	\$ 149,760.00
KRC Waste Management, Inc.	\$ 104,160.00
Moor Disposal Services	\$ 778,939.00
O'Fig Sanitation	\$ 66,375.00
Palmatary's Sanitation	\$ 114,447.00
Town of Elsmere	\$ 94,622.00
Town of Middletown	\$ 306,000.00
Town of Smyrna	\$ 170,295.00
Total Encumbered	\$ 4,828,887.00
Total Expenditures	\$ 4,688,262.96

The application deadline for the second cycle of the Program was March 14, 2012. Funding criteria for this round prioritized compliance assistance with the multi-family residential component of the Universal Recycling legislation, although other projects were considered. This cycle primarily funded recycling dumpsters, collection trucks and related equipment, and outreach expenses. Entities that applied, were awarded, and accepted funding for the second cycle are listed in Table 5. Most of the awardees were municipalities and waste haulers.

Table 5. Entities Funded During the Second Grant Cycle.

Applicant	Funding
Wilmington Housing Authority	\$ 18,059.80
HARJOCO	\$ 54,941.84
DE Restaurant Association	\$ 3,000.00
Econo-Haul	\$ 138,965.00
City of Rehoboth Beach	\$ 18,300.00
City of Newark	\$ 6,604.00
Lutheran Senior Services	\$ 2655.48
Burns and McBride	\$ 83,521.66
Total Encumbered	\$ 326,047.78
Total Expenditures	\$ 292,954.98

The application deadline for the third cycle of the Program was March 28, 2013. Funding criteria for this round prioritized compliance assistance with the commercial recycling component of the Universal Recycling legislation, although other projects were considered. This cycle primarily funded recycling dumpsters, collection trucks and related equipment, and outreach expenses. Entities that applied, were awarded, and accepted funding for the third cycle are listed in Table 6. Grant contracts for these awardees were signed in June of 2013. The awardees were a mix of municipalities, waste haulers, private businesses and not-for-profit entities.

Table 6. Entities Funded During the Third Grant Cycle.

Applicant	Funding
Waste Management Inc.	\$91,933.33
Bethany Beach	\$17,325.00
Del. Nature Society	\$3,425.00
RevolutionRecovery	\$357,949.00
RPJ Waste	\$280,152.82
Recycling Express	\$58,291.63
Lewes	\$34,800.00
Delaware State Fair	\$22,480.00
Dover Downs	\$28,532.50
REPLENISH – North	\$76,608.00
Del-Mar-Va Council	\$35,212.43
K.S.I.	\$20,225.25
EDEN Delmarva-TLG	\$58,400.00
First State Disposal	\$172,227.00
Peninsula Disposal	\$133,357.33

Total Encumbered	\$1,390,919.29
Total Expenditures	\$ 1,295,408.04

The application deadline for the fourth cycle of the Program was December 18, 2013. Funding criteria for this round prioritized compliance assistance with the commercial recycling component of the Universal Recycling legislation as well as non-profits and school recycling, although other projects were considered. This cycle primarily funded recycling dumpsters, school dishware conversion, balers and outreach and education expenses. Entities that applied, were awarded, and accepted funding for the fourth cycle are listed in Table 7. Grant contracts for these awardees were signed in the Spring of 2014. The awardees were a mix of municipalities, waste haulers, private businesses, schools and not-for-profit entities.

The 146th General Assembly used Bond Bill (House Bill 410) language to direct DNREC to issue a recycling grant to fund the DNREC run yard waste sites. Holland Mulch was awarded a grant to establish a new yard waste drop-off site the details of which are discussed in greater detail in section 6.2 of this report.

Table 7. Entities Funded During the Fourth Grant Cycle.

Applicant	Funding
City of Newark	\$52,075.00
Waste Management Inc.	\$47,700.15
Caesar Rodney	\$16,437.31
Seaford Elementary	\$2,544.48
BFI Truck Body	\$64,646.00
Sanford School	\$25,306.90
BFI Containers	\$48,440.00
Bilcare	\$8,733.61
DE School for Deaf	\$27,687.68
Craig Technologies	\$8,625.00
Goodwill	\$21,907.50
Sussex County Habitat for Humanity	\$18,750.00
Biggs Museum	\$3,999.92
Del Ctr for Inland Bays	\$19,012.95
Total Encumbered	\$365,866.50
Total Expenditures	TBD

The application deadline for the fifth cycle, which prioritized implementation of school recycling programs, was August 14, 2014 and those awards are in process but the contracts are not finalized. Eight applicants were selected for funding in the amount of approximately \$96,670. Final details will be reported in the next RPAC annual report.

The Recycling Grants and Low Interest Loan Program is funded by the recycling fees established in the Universal Recycling Law. The fees will automatically sunset on December 1, 2014. As of August 2014 the total revenue generated was approximately \$12 million. A total of \$

6,739,162.48 has already been allocated on the above mentioned grants with an additional \$482,000 of this fund allocated to DNREC yard waste site management at the direction of the legislature. About \$5 million is expected to be available for future grant cycles. DNREC and RPAC are certain that remaining funding will be critical in order to reach the legislated diversion goals established for both 2015 and 2020. As such, the remaining funding is critical to fund grant opportunities beyond the cessation of the bottle fee revenue effective December 1, 2014.

6.0 DNREC Activities

DNREC's activities conducted in support of waste minimization and attaining the waste diversion goals included providing support to the RPAC, encouraging the recycling of yard waste, implementing and ensuring compliance with the universal recycling legislation, and conducting outreach and education.

6.1 Supporting the RPAC

In fulfillment of its responsibilities under the Universal Recycling Law, and previously under Executive Order No. 90, DNREC continues to work diligently to provide support to the RPAC. The tasks that DNREC carried out in this area included, but were not limited to:

- Arranging all RPAC meetings;
- Preparing and distributing agendas and minutes for all RPAC meetings;
- Publicizing the RPAC meetings, reports, and efforts;
- Coordinating the Universal Recycling Grant and Low-Interest Loans Program;
- Participating in Subcommittees: Measurement and Reporting (M & R) Subcommittee (responsible for establishing and enforcing recycling reporting requirements and an agreeable recycling measurement methodology for Delaware); and Outreach Subcommittee; Commercial Industry Recycling Subcommittee;
- Drafting pertinent products or documents for RPAC meetings and Subcommittees; and
- Preparing the RPAC's Annual Report (including printing and distribution).

6.2 Supporting the Diversion of Yard Waste

The bulk of DNREC's yard waste diversion efforts have been the operation and maintenance of a temporary community yard waste demonstration site located in New Castle County on Polly Drummond Hill Road. This site was created for residents to bring yard waste from their own property for free. The materials collected at this site are periodically ground into mulch, which is removed by a contractor. A similar DNREC yard waste demonstration site, which was located on Route 13 near the DART maintenance yard, was closed in December of 2012 to allow for construction of a new DMV facility.

The 146th General Assembly used Bond Bill (House Bill 410) language to direct DNREC to issue a recycling grant to fund the DNREC run yard waste sites. Following DNREC's 2012 request for support, the RPAC recommended that DNREC use recycling grant money to issue either: a) A one-time grant for establishment of a private yard waste site that will serve as an alternative to both the DART and Polly Drummond Hill Road sites in between the two existing sites, OR b) A one-time grant for the establishment of a private alternative to the DART site and a one-time grant for the operation of the Polly Drummond Hill Road site or it's alternative. The intent was solely to transition state-operated yard waste drop-off sites into the private sector. The selected grantee, Holland Mulch, used the grant funds to establish a new yard waste drop-off site in between the two sites. There was a long delay in Holland Mulch getting the necessary

approvals from New Castle County and the Department of Transportation to open this new site, which will accept yard waste from Delaware residents at no cost for at least five years. However, this new site located at 1034 South Chapel Street in Newark is now fully operational.

The enforcement of the Cherry Island Landfill yard waste ban has been in place for about six years. Yard waste bans were incorporated in permits for DSWA's Central and Southern landfills effective January 1, 2011. Individuals and businesses have adjusted well. It is estimated that as much as 116,869 tons of yard waste were diverted from Delaware's landfills in 2013. Banning yard waste has effectively diverted a useful material from entering the landfill while fostering local jobs and businesses.

DNREC also continues to work with the University of Delaware Cooperative Extension, the Delaware Center for Horticulture, and a large variety of community groups to educate residents on composting and other alternatives. DNREC readily presents yard waste management information and options to community and interest groups, maintains a yard waste management website (www.dnrec.delaware.gov/yardwaste), and produces a guide to backyard composting.

6.3 Implementing Recycling Legislation

Since the passage of the Universal Recycling Law, DNREC continues with implementation of the tasks required by the Universal Recycling law, including but not limited to:

- Outreach and educational efforts,
- Meeting with waste haulers, municipalities, and the DSWA to coordinate implementation of universal recycling,
- Discussions with retailers, distributors, manufacturers, consumers, and the Division of Revenue to facilitate the bottle recycling fee collections,
- Continuation of the Universal Recycling Grant and Low-Interest Loan Program, and
- Recycling measurement and reporting.

DNREC also coordinated with the Division of Revenue (DOR) to send out a letter to all businesses notifying them of the requirement to implement a comprehensive recycling program effective January 1, 2014. The DNREC recycling notification letter was sent with DOR's annual business license fee to thousands of businesses throughout the state.

DNREC continues to invest significant staff time and resources to support and carry out the Universal Recycling Law. Much work remains as staff works towards achieving the state's 2015 and 2020 diversion goals and every advance in recycling yields environmental and economic benefits.

6.4 Public Education and Outreach

With the implementation of universal recycling, DNREC worked with RPAC and the DSWA on ways to reach practically every Delawarean. DNREC accomplished the following outreach efforts in 2014 (see Appendix D for examples):

- Maintained & upgraded 'Delaware Recycles' website www.recycling.delaware.gov

- Maintained ‘Delaware Recycles’ Facebook page www.facebook.com/delawarerecycles
- Updated the print and digital versions of the ‘How To Recycle’ Guide (October 2014)
- Participated in multiple public events and community meetings
- Issued press releases on recycling related topics

DNREC continues to improve and augment the recycling information resources available on its website and in its handouts. All of RPAC’s Annual Reports, recent meeting minutes and agendas, several studies, information on the universal recycling legislation, and other information on recycling and composting can be found on the DNREC recycling website: (www.awm.delaware.gov/Recycling/Pages/Recycling.aspx) and the DNREC-maintained RPAC website (www.awm.delaware.gov/Info/Pages/RPAC.aspx). These websites include the commercial recycling FAQs, the commercial recycling toolkits, and the commercial recycling Governor’s report. DNREC also has developed and updated websites dedicated to yard waste (www.dnrec.delaware.gov/yardwaste) and the main Universal Recycling portal (www.recycling.delaware.gov).

DNREC conducted or participated in many activities to increase public awareness of recycling opportunities and benefits. DNREC distributed outreach materials and information at public events such as the Wilmington Earth Day, Delaware State Fair, Coast Day, and various farmers markets. Presentations were also provided to schools, community groups, and professional organizations upon request. Outreach activities focused on the opportunities and benefits of recycling and waste reduction. DNREC provided recycling assistance to the commercial sector and conducted waste assessments at many small businesses that included a non-regulatory, informal analysis of the waste stream and waste management practices with follow-up recommendations. As a result of these activities, tens of thousands of Delaware residents were educated on a variety of recycling issues. Table 8 lists public outreach events and meetings attended or hosted by DNREC.

Table 8: Recent DNREC Public Outreach Events and Meetings

Date	Meeting/Event (Location)	Time	Hosted By
November 2, 2013	WJBR, Wilmington	10:30- 11:00	WJBR Radio Interview
November 9, 2013	WDDE, Dover	2:00-2:30pm	WDDE Radio Interview
November 15, 2013	Mid-Atlantic Professional Development Days for Education Office Professionals	12 – 3pm	Atlantic Sands Hotel
December 3, 2013	Goddard Pre-School - Newark	10 - 11am	DNREC waste assessment
December 12, 2013	Biggs Museum – Dover	2 – 3pm	DNREC waste assessment
January 9, 2014	Medical Office - 260 Beiser Rd. Dover	9 – 10 am	DNREC waste assessment
January 9, 2014	Alan Bergzan - 22-23 Old Rudnick Ln. Dover	10 – 11am	DNREC waste assessment
January 9, 2014	Southeast Kitchen – Wilmington	3 – 4pm	DNREC waste assessment
January 14, 2014	St. Andrews School – Middletown	1:30 3:30pm	DNREC waste assessment
January 24, 2014	Sea Colony - Bethany Beach	10 – 12pm	Sea Colony
February 6, 2014	O’Conner Belting – Newark	10 – 12pm	DNREC waste assessment

Date	Meeting/Event (Location)	Time	Hosted By
February 6, 2014	Frazier Place 200 Goldsborough Way Smyrna	2 – 3pm	DNREC waste assessment
February 16, 2014	Cub Pack Blue/Gold Dinner, Camden	4:00-5:00pm	Whatcoat UMC Church
February 18, 2014	Delmar School District	9:30 - 12pm	Delmar School District Office
February 19, 2014	Pizza Villa – Lewes	9 – 10am	DNREC waste assessment
March 11, 2014	School Plant Information Exchange (SPIE)	9 - 10am	Department of Education
March 12, 2014	Watson Funeral Home – Millsboro	9 – 11am	DNREC waste assessment
March 13, 2014	Dover Bowling Lanes	1 – 2pm	DNREC waste assessment
April 15, 2014	Pathways to Green Schools	9:30-1pm	DVGBC (Dover)
April 16, 2014	Eagle’s Nest Christian Academy	9:00 – 2:00pm	Eagle’s Nest Christian Academy
April 22, 2014	Earth Day Event (Wilmington)	11-2pm	Partnership for the DE Estuary
April 22, 2014	Archer Group – Wilmington	3 – 4pm	DNREC waste assessment
May 27, 2014	Rehoboth Beach Farmers Market (Rehoboth)	11:30-5pm	Rehoboth Beach Farmers Market
June 26, 2014	Millville Farmers Market (Millville)	9-2 pm	Town of Millville
July 17-26, 2014	Delaware State Fair (Harrington)	10-8pm (daily)	Delaware State Fair DNREC Building
August 11, 2014	Pathways to Green Schools Roundtable, DelTech	4:00-6:00pm	DVBBC
August 27, 2014	Public Hearing, Rose Community Center, New Castle	6:30-9:30pm	DNREC
September 16, 2014	Green Hospitality Conference (Dover)	8:30 – 4:30pm	Dover Downs
September 20, 2014	International Coastal Clean-up	9 12pm	DNREC
September 22, 2014	DNREC Zero Waste OEP Recognition Event	9 – 3pm	DNREC - Killens Pond State Park
October 5, 2014	Coast Day (Lewes)	11-5pm	UD – Lewes Campus
October 28, 2014	BioCycle East Coast Conference	8:30 – 5:30pm	Bio Cycle
October 29, 2014	Pathways to Green Schools Round Table	5:00 – 7:00pm	DVGBC

7.0 DSWA Activities

7.1 RECYCLE DELAWARE

Drop Off Center Program

The DSWA continues to operate over 75 recycling drop off centers conveniently located throughout Delaware. The drop off center program continues to be one of the most successful and cost-effective voluntary drop-off programs in the nation. Delaware residents can drop off single stream recycling as well as used motor oil, oil filters, household batteries, corrugated cardboard and textiles. In FY13, 11,148 tons of recyclables were received at the drop off centers.

Electronic Goods Recycling Program

In FY13, 1,738 tons of electronic goods were recycled through DSWA's electronic goods collection program. There are currently 12 electronic good drop-off locations throughout Delaware. DSWA provides free collection of electronic goods to government agencies and schools each month.

Household Hazardous Waste (HHW) Program

In FY13, DSWA held fifteen (13) HHW events throughout the state. Approximately 3,500 vehicles dropped off household hazardous waste. The total amount of HHW collected at all events totaled 183,040 pounds. In addition to the thirteen events held throughout the state, DSWA holds weekly collection events at the DSWA Cheswold Collection Station and at the Delaware Recycling Center in New Castle. These weekly events collected an additional 83,377 pounds of material, making a grand total of 266,417 pounds collected for FY13.

Oil Filter and Waste Oil Recycling Programs

In FY13, DSWA collected 43 tons of oil filters and 599 tons of used motor oil from over 40 DSWA drop off centers located throughout Delaware.

Polystyrene Foam Recycling Program

In FY13, DSWA started a new recycling program for polystyrene (#6 foam); Residents and commercial companies can drop off polystyrene at the Milford Transfer Station and the Delaware Recycling Center in New Castle. For FY13, DSWA collected 28,261 pounds of polystyrene.

Household Battery Recycling

In FY13, DSWA collected 133,160 pounds of non-rechargeable household batteries and 3,380 pound of rechargeable batteries that were recycled.

7.2 Universal Recycling Activities

The Governor's Universal Recycling Bill was signed into law June 8, 2010. DSWA believes the Universal Recycling Law will significantly increase the amount of recycling participation in Delaware. In FY13 DSWA received 69,687 tons of single stream recyclables from trash haulers who collected it from residents living in single family and multi-family dwellings. The significant increase in single stream recycling that occurred because of the Universal Recycling Law has made it possible for the construction of a brand new, state of the art, Material Recovery Facility (MRF) which is located at the Delaware Recycling Center in New Castle. This new facility was built by Re-Community Recycling, a nationwide recycling company. The new MRF will be able to process single stream recycling at the rate of 35 tons per hour and has enough capacity to handle all of the single stream material for the State of Delaware for the next 20 years.

7.3 Public Education and Outreach

DSWA strongly believes in educating Delaware residents to increase awareness and to establish an interest in protecting the environment. DSWA educates residents about their programs through school and community presentations, attending special events, and developing educational books and program brochures. In 2013, DSWA attended over 150 school and community presentations reaching over 19,500 residents. DSWA distributed educational materials covering multiple topics for children of all ages with emphasis on recycling and composting.

In 2013, DSWA placed an important emphasis on its public outreach effort by attending over 28 different events throughout the state, which reached over 300,000 Delaware residents. DSWA attended events such as the Delaware State Fair in Harrington, University of Delaware's Coast Day in Lewes, as well as hosting the Annual DSWA Earth Day Event in Felton. DSWA attends events like these to promote environmental awareness throughout the state as well as educate the public on programs and facilities that DSWA provides for residents.

DSWA constructed a new Environmental Education Building, which opened in September 2013. The center is located at the Delaware Recycling Center, next to the MRF. In the first school year of operation, over 600 children from Delaware schools visited the center and learned about recycling, composting and conservation.

DSWA encourages citizens of Delaware to contact them if they are in need of environmental information concerning any DSWA program or facility. DSWA provides a Citizens' Response Line, (800-404-7080) which answers approximately 100 calls a day from residents. In addition, DSWA's website (www.dswa.com) provides even more information for Delaware residents. These resources provide valuable information and keep the personal touch that has helped to establish DSWA as a leader in the environmental community.

8.0 Recommendations

8.1 Discussion of Goals

In addition to the RPAC's recommendations listed below, § 6056(b) requires *"In order to ensure that the waste diversion goals specified in Table 1 of this section above are achieved by the dates specified, the Department, in cooperation with the Recycling Public Advisory Council [RPAC], shall assess progress and recommend to the Governor and General Assembly any additional mechanisms necessary including but not limited to: which waste streams must be diverted from disposal; the parties responsible for ensuring the identified waste streams are diverted from disposal; the date by which the diverted waste streams must be diverted from disposal; implementation of Pay As You Throw; Extended Producer Responsibility; incentive based recycling; waste bans and related requirements. Such assessment shall be completed, inclusive of any draft legislation determined necessary, and submitted to the General Assembly no later than November 1, 2014, as part of the RPAC annual report."*

The intent of this requirement, as clearly stated, is to make sure the diversion goals are met. However, three key points are necessary to understand before such specific recommendations can be made. The first important point is that the "Municipal Solid Waste" (MSW) diversion rate calculation for 2014, which is the first year that all three phases of the universal recycling requirement will have been implemented, will not be known until mid-2015. At this point in time it is not known if the 2015 diversion goal of 50% for MSW will be met (although we speculate the rate will fall several percentage points short of the goal). The second point is that the "Total Solid Waste" (TSW) diversion rate is only calculated once every five years and that data also will not be known until mid-2015. The third important point is that it is also necessary to understand which recyclable material is or is not being recycled, and in which sector – commercial or residential – said recycling is or is not occurring, before specific recommendations can be made as to how to improve on the diversion of one or more recyclable materials in one or both sectors.

Several important activities are underway that will provide the data needed to answer these questions and from which recommendations can be confidently made to boost Delaware's diversion rate even further. Specifically those activities are:

- Calculation of both the MSW and TSW diversion rates in 2015,
- The Delaware Solid Waste Authority's updated Statewide Solid Waste Management Plan available in 2015 and,
- An updated Solid Waste Characterization Study, available in early 2016, that will provide valuable information on the amount and types of recyclables that remain in both the residential and commercial waste stream and therefore require additional effort regarding their diversion.

Armed with this information RPAC will work with DNREC and DSWA on making the recommendations, inclusive of draft legislation if appropriate, necessary to achieve the Interim Zero Waste Diversion Goals as specified in Table 1 of 7 Del. C. § 6056.

8.2 Current Recommendations

The RPAC's recommendations to Governor Markell and the General Assembly include the following steps that can be taken now to increase the recyclables diversion rate:

- 1. Provide RPAC the discretion to fund those purposes specifically identified in the original Universal Recycling Legislation (7 Del. C. Chapter 60, Subchapter III, Solid Waste Recycling).** In order to meet the diversion goals established under the Universal Recycling Law, the RPAC estimates all of the funds from bottle fees will be required. Do not divert further funds from the Delaware Recycling Fund without RPAC recommendations.
- 2. Lead by example - require recycling in all state government facilities, including public schools and libraries, the courts system, and the legislature.** Many of these facilities are believed to lack effective recycling programs. With the commercial recycling requirement in effect January 1, 2014 and with these government offices falling under the jurisdiction of the commercial recycling requirement, appropriate measures should be taken as necessary to ensure recycling is provided at all of these facilities. The status of recycling in executive branch offices under Executive Order 18 should be measured.
- 3. Support business organizations and local government's efforts to expand recycling.** Although the commercial recycling requirement has only been in effect for eleven months, the available data suggests this sector has a lot of room for improvement. This statement is made based on historical waste characterization data and a notably lower diversion rate than in the residential sector. Therefore, it is important to continue to provide resources and support efforts to recycle in all commercial sectors.
- 4. Seek to strengthen food waste diversion -** Encourage DNREC and DSWA to investigate and collaborate on solutions that will result in viable long term food waste diversion alternatives in northern Delaware. Food waste is a significant and valuable part of the waste stream comprising up to 18% of landfill waste. The closing of the Peninsula Composting facility will immediately result in a one percent reduction in the state's total diversion rate as well as eliminate the potential for any additional increase in food waste diversion in the near term. This will have a direct impact on meeting the state's established diversion goals.
- 5. Funding –** On December 1, 2014, the Recycling Fee of \$.04 per bottle will sunset. However, with the end of this Fund, comes the end of an on-going revenue source for DNREC's support of recycling programs and the overall implementation and evaluation of universal recycling. Action is required by the General Assembly to ensure that future funding exists to fund DNREC's support, oversight and administration of the universal recycling law.
- 6. Support recycling outreach and educational efforts in Delaware.** There still is a need to help Delawareans understand how to recycle, opportunities for various materials, and the benefits of recycling from both the residential and commercial sectors.

Appendix A. Universal Recycling Law

Delaware Code TITLE 7

Conservation

Natural Resources

CHAPTER 60. ENVIRONMENTAL CONTROL

Subchapter III. Solid Waste Recycling

§ 6051. Findings; intent.

In furtherance of the determination long established in § 6450 of this title that "the reduction of solid waste disposal and recovery of usable materials from solid waste are matters of extreme importance in minimizing the environmental impact of solid waste disposal through landfilling" and that it "is in the public interest to develop a comprehensive statewide system of recycling and resource recovery which maximizes the quantity of solid waste materials which can be recovered, reused or converted to beneficial use" the General Assembly hereby makes the following findings and declares the following intent with respect to the establishment of this subchapter. In order to establish a comprehensive statewide system of recycling, wherein recycling is maximized and the necessary economies of scale are realized, every residence and business must have access to recycling programs that are both convenient and cost effective. It is the intent of the General Assembly, in full recognition that the establishment of a comprehensive statewide recycling program has long been sought, that said program shall be accomplished by modification of the existing beverage container law and the establishment of universal recycling inclusive of the prescribed recycling programs, requirements and goals that follow. As such, liberal interpretation in favor of accomplishing the stated goals and objectives shall be exercised.

[77 Del. Laws, c. 275, § 1.](#);

§ 6052. Definitions.

Notwithstanding any definitions in Chapter 60 or 64 of this title to the contrary, the following words and phrases shall have the meaning ascribed to them in this subchapter unless the context clearly indicates otherwise.

(1) "Authority" means the Delaware Solid Waste Authority.

(2) "Beverage" means any mineral waters (but not including naturally sparkling mineral waters), soda waters or any other carbonated beverage not containing alcohol that is commonly known as a "soft drink" and any beer, ale or other malt beverage containing alcohol.

(3) "Beverage container" means any airtight non-aluminous container containing less than 2 quarts of a beverage under pressure of carbonation.

(4) "Dealer" means any person who engages in the sale of beverages in beverage containers to a consumer and shall include groups of retailers or retail chains.

(5) "Multi-family" means 3 or more attached structures, such as condominiums or apartments, generally intended for occupancy by individuals or families and where centralized community trash disposal and collection services are typically provided.

(6) "Municipal solid waste" means wastes such as durable goods, nondurable goods, containers and packaging, food scraps, organic yard waste and miscellaneous inorganic waste from residential (i.e. household), commercial, institutional and industrial sources such as appliances, automobile tires, old newspapers, clothing, disposal tableware, office and classroom paper, wood pallets, and cafeteria wastes. Municipal solid waste does not include solid wastes from other sources such as construction and demolition debris, auto bodies, municipal sludges, combustion ash and industrial process wastes.

(7) "On-premises sales" means sales transactions in which beverages are purchased by a consumer for immediate consumption within the area under the control of the dealer.

(8) "Organic yard waste" means plant material resulting from lawn maintenance and other horticultural gardening and landscaping activities and includes grass, leaves, prunings, brush, shrubs, garden material, Christmas trees and tree limbs up to 4 inches in diameter.

(9) "Recyclable material" or "recyclables" means any material or group of materials that can be collected and sold or used for recycling.

(10) "Recycling" means the process by which solid wastes are separated for use as raw materials, products or replacement of products, including the reuse of organic yard waste, but does not include the incineration of materials for energy.

(11) "Residential waste" means the solid waste generated in occupied single-family and multi-family structures. Also referred to as "household waste".

(12) "Single stream" means a system in which all fibers (including but not limited to paper, cardboard, etc.) and containers (including but not limited to plastic, glass and metal) are commingled for collection into 1 container instead of being sorted into separate commodities and multiple containers.

(13) "Single-family" means either a detached structure (i.e. a house) surrounded by open space or attached structures, such as town or row homes, generally intended for occupancy by a family and where individual trash collection services are typically provided for each structure.

(14) "Source-separated" means recyclable materials, including single stream recyclables, are segregated at the point of generation and kept apart from the waste stream by the generator thereof for the purpose of collection and recycling.

[61 Del. Laws, c. 503, § 1](#); [63 Del. Laws, c. 385, § 1](#); [67 Del. Laws, c. 341, § 1](#); [71 Del. Laws, c. 74, § 2](#); [77 Del. Laws, c. 275, § 1](#);

§ 6053. Universal recycling.

The goal of universal recycling is to create an economy of scale wherein a dramatic increase in Delaware's diversion of recyclables occurs in the most cost effective manner achievable while simultaneously creating job opportunities and significantly reducing Delaware's rate of waste disposal.

Universal recycling shall be implemented in accordance with the following provisions:

(1) Effective no later than September 15, 2011, the Authority shall cease providing curbside recycling services, including yard waste collection, and all persons providing solid waste collection services in the State shall also provide:

a. Single-stream curbside recycling collection services to all of their Delaware single-family residential customers, including delivery of a container for the purpose of storage and collection of recyclables that is adequately sized for the customers use such that recycling is encouraged and disposal of recyclables is discouraged; and the recyclables collection service shall be provided at a frequency of not less than once every other week.

b. Source-separated recycling collection services to dealers who provide on-premise sales, including delivery of a recyclables container that is adequately sized for the premise being served and a frequency of recyclables collection that shall preclude the recycling containers from overflowing and otherwise causing a nuisance.

c. All single-family residential and on-premise sales customers with a single charge for the collection of waste and recyclables on their "waste services" bill that is inclusive of the combined waste and recycling collection service costs. Local governments that do not presently bill separately for the costs of waste collection are exempt from this requirement.

d. Notification to all customers that the single-stream recycling service will be provided and instructions on participation prior to September 15, 2011.

(2) Effective no later than January 1, 2013, all persons providing solid waste collection services in the State shall provide:

a. Single-stream recycling collection services to all of their Delaware multi-family residential customers, including providing the multi-family complex with an appropriately sized and centrally located recyclables collection container or containers for the complex being served and ideally in the same proximity as the complex's waste disposal containers. Local governments

may require multi-family complex owners to provide their own recyclable collection containers consistent with local requirements.

b. Notification to the multi-family complex management that the single-stream recycling service, including instructions on participation, will be provided.

c. A frequency of recyclables collection that shall preclude the recycling containers from overflowing and otherwise causing a nuisance.

d. Written justification to the Department for not providing multi-family recycling collection services where the physical constraints of the site prevent the placement of both trash and recycling containers. Exclusion from multi-family recycling is subject to Department review and approval.

(3) Owners of multi-family complexes must, at least once per calendar year, provide residents with instructions on participating in the complex's recycling program.

(4) The Recycling Public Advisory Council shall issue a report to the Governor and the General Assembly no later than November 1, 2012, with recommendations regarding the implementation of universal recycling in the commercial sector. It is the express requirement of this legislation that universal recycling be adopted by the commercial sector and that all commercial businesses actively participate in a comprehensive recycling program no later than January 1, 2014.

(5) Persons who choose to transport and deliver the solid waste and recyclables they generated on their own property for proper disposal or to a recycling facility of their choice respectively shall not be affected by this subchapter and may continue in this practice.

(6) Nothing shall impair the ownership of recyclable materials by the generator unless and until such materials are placed at curbside or similar location for collection and recycling, and nothing in this chapter shall be construed to prevent any person from collecting, transporting, processing, and marketing recyclable materials in competition with other persons in the same business, including the Authority, provided that the requirements of this subchapter are satisfied.

(7) Persons engaging in the collection, transportation, processing, or marketing of source separated recyclable materials shall conduct such activities in a manner that the source separated recyclable materials enter the marketplace and are otherwise not disposed via a landfill or by incineration.

[77 Del. Laws, c. 275, § 1.](#);

§ 6054. Delaware Recycling Fund.

(a) There shall be established in the State Treasury and in the accounting system of the State a special fund to be known as the Delaware Recycling Fund ("the Fund").

(b) The following revenue shall be deposited into the Fund:

(1) As specified in § 2912 of Title 30, the recycling fee on the sale of beverage containers;

(2) On the last day of each month, the State Treasurer shall credit the Fund with interest on the average balance in the Fund for the preceding month. The interest to be paid to the Fund shall be that proportionate share, during such preceding month, of interest to the State as the Fund's and the State's average balance is to the total State's average balance;

(3) Any other revenue appropriated or transferred to the account by the General Assembly; and

(4) Repayment of low interest loans.

(c) The Fund shall be used by the Secretary for the exclusive purpose of funding specific activities designed to enhance the State's recycling rate and the diversion of recyclables that would otherwise be land disposed. The Fund may be expended only:

(1) To fund the Recycling Grants and Low Interest Loan Program referenced in § 6055 of this title. Annual funding for the Recycling Grants and Low Interest Loan Program shall be dependent on revenue generated by the Fund;

(2) To pay the limited and reasonable cost of the Department and the Recycling Public Advisory Council to study, evaluate and report on the status and potential for recycling various components of the solid waste stream, with emphasis on those aspects of municipal solid waste and commercial waste necessary to achieve the diversion goals established in § 6056 of this title;

(3) To pay the Department's limited and reasonable costs for administering this subchapter. No greater than 10% of the revenue deposited into the Fund shall be used by the Department for administering this subchapter without approval of the Joint Finance Committee and shall include but not be limited to: promoting the Recycling Grants and Low Interest Loan Program, universal recycling, zero waste principles, development of reporting requirements and related recycling initiatives; and

(4) To pay the Division of Revenue for the costs of administering § 2912 of Title 30.

(d) The Department shall commence the Recycling Grants and Low Interest Loan Program in calendar year 2011 and offer the Program at least annually thereafter until 2014.

(e) The revenue from the Fund and its disbursement via the Recycling Grants and Low Interest Loan Program shall be subject to audit and the recipient of any such funding shall agree to the audit and cooperate with the auditor as a condition of receiving funding.

(f) No expenditures shall be made from the Fund for any grants or loans pursuant to § 6055 of this title without the approval by the Controller General and Director of the Office of Management and Budget of a plan for revenues and expenditures for the period between December 1, 2010, and September 15, 2011.

[77 Del. Laws, c. 275, § 1.](#);

§ 6055. Recycling Grants and Low Interest Loan Program.

(a) There is hereby established a competitive Recycling Grants and Low Interest Loan Program (the "Program") to assist persons engaged in the business of collecting, transporting, processing, or marketing recyclable materials with the implementation of:

(1) Source-separated recyclables collection and processing programs with emphasis on start-up costs for residential single-stream recyclables collection; and

(2) Start-up costs for initiatives which result in the recycling of solid waste materials which would otherwise be land disposed, with emphasis on commercial waste.

The Program shall be administered by the Department, and monies from the Program shall be paid based on approved grant and loan requests. The Department shall be entitled to disburse grant and loan monies for the documented costs of implementing the collection or processing of recyclable materials. The Department shall be entitled to adopt guidelines and procedures for administering the Program and determining eligibility for receipt of funding pursuant to § 6054 of this title. Such procedures shall include provisions for repayment of loans to the Department and may include a rebate program for costs based on, including but not limited to, a prorated share of household customers in a recycling program that may have been in existence prior to creation of this law. The Department shall solicit the commentary of the grant eligible stakeholders during development of the grant guidelines and procedures. The Program shall be funded by monies made available under the provisions of § 6054 of this title.

(b) The Recycling Public Advisory Council, after the receipt of comments by grant and loan eligible stakeholders, shall make recommendations annually to the Department regarding the programmatic priorities for awarding Program funds under this subchapter. The Recycling Public Advisory Council shall provide recommendations regarding the categories and priorities for grants and loans that reflect an informed and representative view of the most urgent and important areas where grant funding will provide the most benefit to the State balancing current needs with those of future generations.

(c) The Department shall review all grant and loan applications and award grants and loans taking into consideration the Recycling Public Advisory Council recommendations. In those cases where the Department's funding decisions differ significantly from the Recycling Public Advisory Council recommendations, the Department shall report to the Recycling Public Advisory Council the justification for such differences.

(d) Any person providing solid waste collection services that is a recipient of a grant or low interest loan from the Delaware Recycling Fund shall not, as a result of implementation of universal recycling, increase rates charged for solid waste collection between such time as they make application for the grant until March 15, 2013.

[77 Del. Laws, c. 275, § 1.](#);

§ 6056. Adopting diversion goals and reporting requirements [Effective Dec. 1, 2010]

It is the intent of the General Assembly that implementation of the requirements of this subchapter reduce the amount of nonhazardous solid waste currently deposited in landfills in this State by maximizing the recovery of recyclable materials. In order to do so, it will be necessary for the State to embrace the Zero Waste Principles of designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not incinerate or bury them. In that spirit, the following Interim Waste Diversion Goals are established with the understanding that as more data and information regarding the implementation of universal recycling become available, the goals leading up to January 1, 2020 may be modified by the Department as circumstances dictate; however, the January 1, 2020, goals may not be modified without the approval of the General Assembly:

Table 1. Interim Zero Waste Diversion Goals (1)		
Date by which goal is to be achieved	Solid Waste Diverted from disposal	Municipal Solid Waste Diverted from disposal
January 1, 2015	72%	50%
January 1, 2020	85%	60%
(1) By weight		

(1) In order to effectively measure the diversion rates being achieved, all persons, including persons who collect, process or market recyclables, with the exception of those specified in § 6053(5) of this title, must report to the Department on a calendar year basis, no later than February 15 of the following year, the type and quantity of recyclables managed, the method of recycling collection used (single or multiple streams), and the location of the recycling facilities used pursuant to reporting guidance developed by the Department and the Recycling Public Advisory Council. Said reporting guidance shall be developed pursuant to the solicitation of stakeholders responsible for reporting, shall take into account the need for confidentiality of the information reported and shall be finalized no later than December 1, 2010. The first recycling report shall cover calendar year 2011 and shall be due no later than February 15, 2012.

(2) In order to ensure that the waste diversion goals specified in Table 1 of this section above are achieved by the dates specified, the Department, in cooperation with the Recycling Public Advisory Council [RPAC], shall assess progress and recommend to the Governor and General Assembly any additional mechanisms necessary including but not limited to: which waste streams must be diverted from disposal; the parties responsible for ensuring the identified waste streams are diverted from disposal; the date by which the diverted waste streams must be diverted from disposal; implementation of Pay As You Throw; Extended Producer Responsibility; incentive based recycling; waste bans and related requirements. Such assessment shall be completed, inclusive of any draft legislation determined necessary, and submitted to the General Assembly no later than November 1, 2014, as part of the RPAC annual report.

[77 Del. Laws, c. 275, § 1;](#)

§ 6057. Beverage containers -- Findings, intent, prohibitions.

(a) The General Assembly hereby finds that beverage containers are a valuable recyclable material and a major source of nondegradable litter in this State and that the collection and disposal of this litter and solid waste constitutes a great financial burden for the citizens of this State; and that, in addition to this unnecessary expenditure of tax moneys, such litter unreasonably interferes with the enjoyment of life and property by our citizens; and that the practice of littering and disposal of a recyclable material is not compatible with previously adopted policies of the State in regard to proper use and protection of our natural resources.

(b) It is the intent of the General Assembly to increase recycling significantly, inclusive of beverage containers, thereby conserving valuable natural resources, removing the blight of litter on the landscape of the State caused by the disposal of beverage containers and other packaging, and reduce the increasing costs of litter collection and disposal.

(c) Prohibitions. -- No beverage shall be sold or offered for sale in this State:

(1) In containers connected to each other with plastic rings or similar devices which are not classified by the Department as biodegradable, photodegradable or recyclable.

(2) In a beverage container which is not recyclable or refillable.

[61 Del. Laws, c. 503, § 1](#); [64 Del. Laws, c. 57, § 1](#); [67 Del. Laws, c. 341, § 2](#); [77 Del. Laws, c. 275, § 1](#);

§ 6058. Establishment, composition and responsibility of the Recycling Public Advisory Council.

(a) There is hereby established a Recycling Public Advisory Council (the "Council"). The Council shall be composed of 16 members who shall be appointed by the Governor as follows:

(1) One member from the Department;

(2) One member from the Authority;

(3) One member representing county governments, with such member being recommended by the Delaware Association of Counties;

(4) One member representing municipal governments, with such member being recommended by the Delaware League of Local Governments;

(5) One member representing the recycling industry;

(6) One member representing the waste hauling industry;

(7) Two members, 1 representing the soft drink industry and 1 representing the alcohol beverage industry, representing the beverage industry;

- (8) One member representing the Delaware State Chamber of Commerce;
- (9) One member representing the Delaware restaurant industry; and
- (10) Five members representing community-based or public-interest groups.
- (11) One member representing the Delaware Food Industry Council.

(b) Members of the Council, except for those appointed pursuant to paragraphs (a)(1) and (2) of this section above, shall serve for terms up to 3 years and may not serve more than 2 consecutive terms but may again serve after 1 year off of the Council. Members shall be appointed for staggered terms so that no more than 5 appointments shall expire in any 1 calendar year. Members may be reimbursed for travel to and from meetings. The Governor shall appoint a Chairman from among the 16 members. Actions of the Council shall be approved by a majority vote of the Council. At least 9 members of the Council shall constitute a quorum. The Council may adopt bylaws as it deems appropriate to serve the purposes of this subchapter.

(c) The Recycling Public Advisory Council shall:

- (1) Advise the Department and the Authority on all aspects of recycling;
- (2) Advise the Department in developing criteria for the Recycling Grants and Low Interest Loan Program and selection of applications as well as provide an annual assessment of the revenue needed to satisfy the grant requirements;
- (3) Maintain, in conjunction with the Department and the Authority, a methodology for measuring recycling rates;
- (4) Provide advice and recommendations regarding the recycling outreach and education programs conducted by the Authority and/or the Department;
- (5) Report to the Governor and the General Assembly annually by November 1 of each year on the status of recycling activities in Delaware. Said report shall include, but not be limited to the following:
 - a. Status of attainment of the recycling goals specified in § 6056 of this title;
 - b. An accounting of the recycling grants and loan program and any recommendations for future funding of the grants and loan program;
 - c. An assessment of the activities of both the Department and the Authority in achieving the recycling goals specified in § 6056 of this title;
 - d. An objective, auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste;
 - e. Such other recommendations as the Council shall deem appropriate; and

f. Use the definitions of "recycling" and "municipal solid waste" as stated by the United States Environmental Protection Agency in its document EPA530-R-97-011 dated September 1997. The Council shall be able to adopt changes to these definitions.

(d) The Department, in concert with the Authority and the Council, shall:

(1) Monitor the State's recycling initiatives and measure Delaware's achievements toward attainment of the recycling goals specified in § 6056 of this title;

(2) Design and implement public educational efforts aimed at increasing public awareness of recycling opportunities;

(3) Provide technical assistance to local entities to assist them in increasing their recycling rates; and

(4) Provide administrative support to the Council.

[77 Del. Laws, c. 275, § 1.](#);

§ 6059. Enforcement, civil and administrative penalties.

(a) Whoever violates this subchapter, or any rule or regulation promulgated there under, or any order of the Secretary, shall:

(1) For the first conviction, be fined not less than \$100 nor more than \$500 for each day of violation;

(2) For each subsequent conviction for the same offense within a 10-year period, be fined not less than \$500 nor more than \$1,500 for each day of violation;

(3) In the Secretary's discretion, the Secretary may endeavor by conciliation to obtain compliance with all requirements of this subchapter. Conciliation shall be giving written notice to the responsible party:

a. Specifying the complaint;

b. Proposing a reasonable time for its correction;

c. Advising that a hearing on the complaint may be had if requested by a date stated in the notice; and

d. Notifying that a proposed correction date will be ordered unless a hearing is requested.

If no hearing is requested on or before the date stated in the notice, the Secretary may order that the correction be fully implemented by the proposed date or may, on the Secretary's own

initiative, convene a hearing, in which the Secretary shall publicly hear and consider any relevant submission from the responsible party as provided in § 6006 of this title.

(b) Any person whose interest is substantially affected by any action of the Secretary may appeal to the Environmental Appeals Board, in accordance with § 6008 of this title.

Appendix B.

Recycling Public Advisory Council Members

Brock J. Vinton II, RPAC Chairman – Representing community-based or public-interest group
Citizens Solid Waste Solutions Commission

Paul R. Bickhart – Representing the recycling industry
Recycling Express of Delaware, Inc.

Michael D. Parkowski – Representing the Delaware Solid Waste Authority
Chief of Business and Governmental Services, Delaware Solid Waste Authority

Richard C. Cecil – Representing the Delaware Association of Counties
Executive Director, Delaware Association of Counties

Marianne Cinaglia – Representing community-based or public-interest group
Delaware Environmental Alliance for Senior Involvement

Marjorie A. Crofts – Representing the Dept. of Natural Resources and Environmental Control
Director, Division of Waste and Hazardous Substances

George Danneman – Representing the soft-drink industry
Delaware Beverage Association

Kelly Davis – Representing community-based or public-interest group
Educator, Delaware Technical and Community College Owens Campus

Michael Fusca – Representing the alcohol beverage industry
Standard Distributing Company

Brenna Goggin – Representing community-based or public-interest group
Delaware Nature Society

Robert A. Ziegler – Representing the Waste hauling industry
Republic Services

Brian Nixon – Representing the Delaware Chamber of Commerce
Invista

Adam Webster – Representing the restaurant industry
Grotto Pizza

Coralie Pryde – Representing community-based or public-interest group
League of Women Voters

Julie Miro Wenger – Representing the Delaware Food Industry Council

Stan Mills – Representing the Delaware League of Local Governments
Commissioner, City of Rehoboth Beach

Appendix C.

DSM Measurement Report

Final Report
December 2014

Prepared for:
Recycling Public Advisory Council
c/o DNREC
89 Kings Highway
Dover, DE 19901

State of Delaware Assessment of Municipal Solid Waste Recycling For Calendar Year 2013



Prepared by:
DSM Environmental Services, Inc.
PO Box 2
Windsor, VT 05089-0002
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State of Delaware
Assessment of MSW Recycling for CY 2013



RESULTS

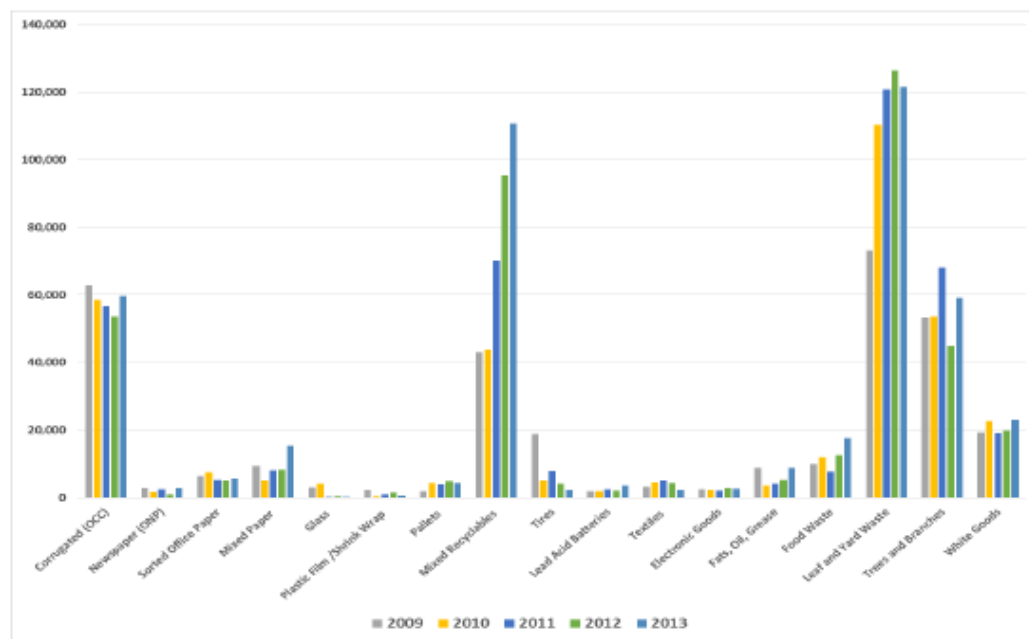
Table 2 (on the next page) presents the 2013 results together with the 2010 through 2012 results to enable comparison. Separate numbers are reported for many materials collected by DSWA. However in 2013, DSWA contracted recyclables processing out to a private vendor and therefore mixed recyclables collected by DSWA are no longer reported by DSWA separately, as they are reported by the private processor and aggregated with all other mixed recyclables (mainly single stream materials) reported by other handlers/processors. Because of the large number of material categories, and changes in recycling activity and material flow between years, Table 2 is heavily footnoted, and followed by a detailed discussion of the 2013 Results by material type.

The 2013 survey results indicate that material diverted for recycling increased by 12 percent, or roughly 48,000 tons (rounded) between 2012 and 2013. Although CY 2010 and 2011 tonnages are also shown, they are *not included* in the calculation of the difference.

It is DSM's opinion that the majority of the increase can be directly attributable to the Universal Recycling Law, combined with better reporting due to the enforcement of the mandatory reporting requirement and some increase in economic activity. A detailed explanation is presented below.

Figure 1 compares the major material category totals for 2009 – 2013, including those recycled through DSWA programs and/or facilities. As illustrated by Figure 1, most of the increase is from single stream recycling (labeled as "Mixed Recyclables"), followed by yard waste composting.

FIGURE 1: COMPARISON OF MATERIAL RECYCLED, CY 2009 – 2013 (TONS BY MATERIAL)



State of Delaware
Assessment of MSW Recycling for CY 2013



TABLE 2: COMPARISON OF MSW MATERIALS RECYCLED IN DELAWARE, CY 2013, 2012, 2011 AND 2010

Material Category	CY 2013			CY 2012			CY 2011			CY 2010			Difference, 2013 - 2012			
	All Other (tons)	DSWA (tons)	Total (tons)	All Other (tons)	DSWA (tons)	Total (tons)	All Other (tons)	DSWA (tons)	Total (tons)	All Other (tons)	DSWA (tons)	Total (tons)	All Other (tons)	DSWA (tons)	% Diff 0.00%	Total (tons)
Paper, Paper Packaging																
Corrugated (OCC)	59,684	0	59,684	53,288	252	53,540	53,938	2,858	56,796	50,954	7,553	58,507	6,396	-252	11.48%	6,144
Newspaper (ONP)	2,824		2,824	909		909	2,369		2,369	1,769		1,769	1,915		210.65%	1,915
Sorted Office Paper (1)	5,775		5,775	5,001		5,001	5,078		5,078	7,449		7,449	774		15.48%	774
Mixed Paper (2)	15,328		15,328	8,174		8,174	8,064		8,064	5,041		5,041	7,154		87.52%	7,154
Subtotal:	83,611	0	83,611	67,372	252	67,624	69,449	2,858	72,307	65,212	7,553	72,765	16,239	-252	23.64%	15,987
All Other Packaging																
Glass (3)	170		170	332		332	208		208	4,011		4,011	-162		-48.85%	-162
Plastic Film / Wrap (4)	601		601	1,452		1,452	974		974	425		425	-851		-58.64%	-851
Plastic Containers	118		118	30		30	223		223	37		37	88		294.98%	88
Aluminum Cans (5)	2,277		2,277	696		696	728		728	546		546	1,581		227.13%	1,581
Pallets (6)	4,278		4,278	4,714		4,714	3,842		3,842	4,186		4,186	-436		-9.24%	-436
Mixed Recyclables (7)	110,799	0	110,799	33,079	62,211	95,290	16,002	54,133	70,135	4,755	39,051	43,806	77,720	-62,211	16.28%	15,509
Subtotal:	118,243	0	118,243	40,303	62,211	102,514	21,579	54,133	76,111	13,960	39,051	53,011	77,540	-62,211	15.34%	15,729
Vehicle Waste																
Tires (8)	2,226	0	2,226	3,110	951	4,061	6,831	989	7,820	5,049		5,049	-884	-951	-45.18%	-1,835
Lead Acid Batteries (9)	3,472		3,472	2,052		2,052	2,341		2,341	1,893		1,893	1,420		69.18%	1,420
Oil Filters	452		452	379	0	379	234	58	292	724	425	1,148	73		19.33%	73
Subtotal:	6,150	0	6,150	5,541	951	6,492	9,407	1,047	10,454	7,666	425	8,091	609	-951	-5.27%	-342
Special Wastes																
Carpet	140		140	140		140	742		742	422		422				
Textiles (10)	2,188		2,188	4,284		4,284	4,946		4,946	4,413		4,413	-2,096		-48.92%	-2,096
Fluorescent Bulbs	19		19	15		15	8		8	7		7	4		29.80%	4
Electronic Goods	903	1,717	2,620	839	1,933	2,772	240	1,883	2,123	241	1,909	2,151	64	-216	-5.49%	-152
Other Batteries	16	71	87	3	44	47	48	48	96	101		101	13	27	85.36%	40
Subtotal:	3,267	1,788	5,055	5,281	1,977	7,258	5,984	1,930	7,914	5,185	1,909	7,094	-2,014	-189	-30.36%	-2,203
Organic Wastes																
Fats, Oil, Grease	8,802		8,802	5,103		5,103	4,029		4,029	3,557		3,557	3,699		72.19%	3,699
Food Waste	17,626		17,626	12,701		12,701	7,624		7,624	11,904		11,904	4,925		38.77%	4,925
Leaf and Yard Waste	121,514		121,514	126,463	0	126,463	116,756	4,111	120,867	95,594	14,865	110,459	-4,949		-3.91%	-4,949
Trees and Branches	59,125		59,125	44,888		44,888	68,157		68,157	53,580		53,580	14,737		31.72%	14,737
Clean Wood	4,756		4,756	5,410		5,410	5,152		5,152	2,371		2,371	-654		-12.10%	-654
Subtotal:	211,822	0	211,822	194,565	0	194,565	201,718	4,111	205,829	167,007	14,865	181,872	17,257	0	8.87%	17,257
Metals																
White Goods (11)	22,178	790	22,968	19,454	458	19,912	18,444	768	19,212	21,676	973	22,649	2,724	332	15.35%	3,056
Subtotal:	22,178	790	22,968	19,454	458	19,912	18,444	768	19,212	21,676	973	22,649	2,724	332	15.35%	3,056
Other																
Mixed Plastics (12)	2,645	6	2,651	3,965	0	3,965	2,063	0	2,063	2,705	0	2,705	-1,320	6	-33.15%	-1,314
Subtotal:	2,645	6	2,651	3,965	0	3,965	2,063	0	2,063	2,705	0	2,705	-1,320	6	-33.15%	-1,314
Total	447,915	2,590	450,499	336,481	69,249	402,330	329,045	64,846	393,891	280,588	64,776	345,364	111,434	-43,265	11.97%	48,169

TABLE 2 NOTES:

- (1) Sorted Office Paper: Some figures may be included in mixed paper. Note that 2011 figures were corrected (adjusted down) in the 2012 and 2013 report to correct a reporting error in 2011.
- (2) Mixed Paper: All mixed paper reported was included as MSW even in cases where processors did not reveal sources.
- (3) Glass: Some plate glass was included in totals reported.
- (4) Plastic Film / Shrink Wrap: This category includes plastic retail bag recycling as most generators were unable to report on plastic bags separate from film and shrink wrap quantities.
- (5) Aluminum Cans: Primarily aluminum cans but may include other aluminum containers reported by scrap metal recyclers.
- (6) Pallets: Only pallets composted or ground for mulch are included in the totals shown and reported for MSW recycling.
- (7) Mixed Recyclables: Single stream material collected from municipal curbside recycling programs, including Wilmington, and collected by subscription haulers from both households and businesses. Note that residue is estimated at 10% in single stream recycling totals, although has not been subtracted out from the totals reported. See discussion of residue in the section below Other Packaging Waste

- (8) Tires: Tons reported for **Tires 2012** have been adjusted up to reflect a reporting error made in 2012 and discovered during 2013 reporting.*
- (9) Lead Acid Batteries: The total reported in 2010 of 14,205 tons was corrected to 1,893 to reflect a data reporting and recording error caught when 2011 reports were filed.*
- (10) Textiles: Used clothing (including shoes) exported for recycling or reuse. The end uses change based on the condition and changing markets. Typically clothing is sorted into 4 color categories and sold as rags, or bagged as is and sold as clothing. No breakdown of the actual end use is available.*
- (11) White Goods: **2012 White Goods** 'All other' Tons has been adjusted down from 23,454 to 19,454 to correct an error made in a 2012 report and corrected by the reporter in 2013.*
- (12) Mixed Plastics may include plastic packaging and other waste plastic generated by manufacturers but sent off site but are reported as mixed plastics by the recycler. Roughly 50% are estimated to qualify as "MSW recycling" consistent with the estimates made in prior years.*

As illustrated by Table 2 total recovery, inclusive of DSWA recycling activity, increased by roughly 48,170 tons. That increase was made up predominantly by paper and packaging materials and organic wastes. This increase is the result of a combination of factors, as described by material category below, but primarily is the result of increased single stream recycling and commercial recycling activity stimulated by the Universal Recycling Law, yard waste bans, improvement in the economy, and better reporting due to the mandatory reporting law.

PAPER RECYCLING

CY 2013 data shows a significant increase in the total Paper and Paper Packaging material recycled in the State of Delaware. Overall, paper recycling increased by 15,987 tons (24%, rounded). Mixed paper and OCC had the most dramatic increases at 7,154 tons and 6,144 tons respectively. DSM believes a number of factors have contributed to the increase in the paper material recycling category between CY 2012 and CY 2013 as bulleted below:

- National economic trends continue to impact OCC's use as a packaging material (especially internet shopping with shipment in small boxes to households), which potentially supports higher quantities of OCC, although offset in some cases by substitution of shrink wrap for OCC at the wholesale and retail level.
- Technology has resulted in the migration of office record keeping from paper to digital. While this industry trend would suggest a reduction in sorted office paper, and possibly mixed paper, this was likely counteracted by an increase in economic activity in CY 2013, as well as the migration of some SOP bales to mixed paper bales.
- The 2013 newspaper (ONP) total is consistent with 2011 and older years, indicating that either the 2012 data were wrong or that that significant amounts of ONP was reported as mixed paper in 2012 but sold this year as ONP (or possibly that ONP generated in 2012 was brokered/reported in 2013).
- An increase in participation and in the quality of data received from most paper reporters, many who are reporting paper grades that are included in mixed office paper as opposed to sorted office paper (with the exception of those processors reporting news).

- Better participation from document destruction and paper shredding outfits, many whom have been part of consolidation activity over the last 2 years and have been very difficult to reach for this survey.

OTHER PACKAGING WASTE

Recycling of packaging wastes are up by 15,730 tons (rounded) primarily due to the increase in single stream recycling activity across Delaware. While single stream recycling was up a reported 15,510 tons (rounded) for CY 2013, this figure includes residue as it has in years past. The residue is estimated to be 10 percent and includes both materials that are not accepted for recycling but collected with other recyclables as well as materials that could be recycled but are not due to process inefficiencies. A 10 percent residue rate is fairly typical at single stream materials processing facilities.

Residue has not been subtracted from the totals reported for single stream materials (mixed recyclables) or for any other materials. For example paper bales may have up to 2 percent or more residue, and textiles and appliances (among other materials) may have some residual materials that cannot be recycled and need to be disposed. While residue has not been accounted for in the totals reported, with the increase in single stream recycling, and potential for higher residue rates, the issue of residue bears mentioning, and is important to track as well as employ methods that can work to decrease the residue rate.

Other explanations for changes in packaging waste recycling figures reported include:

- Recycling of glass reported separately decreased again following the trend begun with the large reduction between 2010 and 2011. This was due to single stream recycling including glass combined with the sunset of the mandated beverage container redemption program that required wholesalers and distributors of glass beverage containers to handle return containers. It should also be emphasized that glass material is still being captured and recycled. The glass tonnage is now captured as part of the single stream material data. However there is no way to confirm how much glass is collected and recycled through single stream for comparison against prior separate collection programs. In addition, the end markets for glass may have changed as a result of the single stream recycling processing.
- There was a decrease in reporting of shrink wrap recycling, which is primarily attributed to one large national broker who has reported regularly but whose company was purchased in 2013, and who did not handle this material for CY 2013.
- There has been an increase in the quantities of aluminum cans reported by scrap metal recyclers. DSM believes that is due to both an increase in small scrappers who collect and consolidate aluminum cans (some likely removing them from curbside bins) and better reporting.
- DSWA began a polystyrene collection program to recycle polystyrene packaging materials and any clean polystyrene foodservice materials. A total of 12 tons of EPS material was collected for recycling in Delaware by DSWA in CY 2013.

SCRAP METAL

White goods (appliances) showed a 3,060 ton (rounded) increase in 2013 over 2012. This increase is primarily due to more accurate reporting by metal recyclers. This may also be due to an improved economy with more consumers purchasing new appliances replacing old ones and scrap yards receiving these discarded appliances.

GREEN WASTE

CY 2013 saw another year of increases in the recovery of green waste. While leaf and yard waste recovery was down by 4,950 tons (rounded) over CY 2012, tree and branch waste recovery was up roughly 14,240 tons (rounded) compared with 2012.

Overall, the difference is likely explained by the following factors:

- Some shifting by reporters in the allocation of material to trees and branch material from leaf and yard material is likely. Handlers of these materials tend to estimate the allocations because they do not track the material in the same way as this survey.
- There were two serious storms (Hurricane Isaac and Hurricane Sandy) during 2012. However, Hurricane Sandy (the most damaging 2012 storm) occurred at the end of October and clean up and counting of some of the debris related to this storm may not have occurred until the beginning of 2013. This could have a significant impact on the volume of trees and branches reported as mulched or composted in 2013.
- A number of large material handlers do not operate with scales. Instead, these handlers measure volume and material handling in cubic yards. The total annual yardage material figure is then split between yard waste and tree waste with the split often approximated as

a 60 percent yard waste and 40 percent tree waste with the densities assigned by DSM if the handler does not report in tons. This process relies heavily on estimates by the material handler for the split and by DSM for the density calculation for the material category, if the handler cannot estimate the density of each material stream.

FOOD WASTE

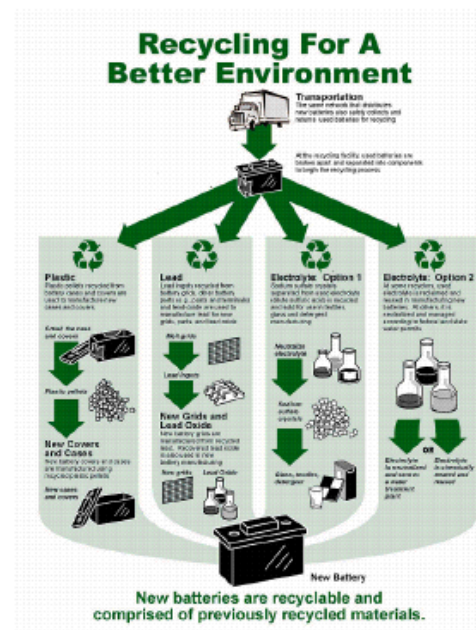
There was an overall increase of 4,925 tons in food waste composting reported for 2013. Fats, oil and grease saw an increase of 3,700 tons (rounded) compared with 2012. An increase in food waste composting for CY 2013 is likely the result of having several facilities offering composting in-state as an alternative to landfilling of these organics, combined with more haulers offering food waste collection services and more businesses (mainly supermarkets and some large restaurants) participating in food waste separation programs. The recent closure of the WORC facility makes it uncertain if longer hauls of food waste generated from businesses in New Castle County to alternative facilities will be feasible next year, or if facilities will have to curtail food waste separation programs until a closer, alternative site is operational.

VEHICLE WASTE

There was decrease in the volume of vehicle waste reported by roughly 340 tons (rounded). This decrease was largely attributable to several critical reporters that provided data for 2013. There was an increase in lead acid battery recycling and a decrease in tire recycling reported.

However tires, lead acid batteries and oil filter recovery continue to be underreported. For example, using national figures from the Rubber Manufacturing Association, waste tire generation for Delaware last year would be roughly 11,000 tons and recovery estimated at 9,000 tons. On a national basis, tire derived fuel uses were roughly 46% of total used tire recovery (excluding retreading). The balance, 54%, goes to construction, engineering and other end uses. Delaware reported 2,230 tons (rounded) for non-tire derived fuel end uses.

Lead acid battery recycling is also underreported. According to the Battery Council International, 98 percent of lead acid battery lead is recovered. In addition, the Council reports that new lead-acid batteries typically contain 60 to 80 percent recycled content (lead and plastic, mainly polypropylene).



TEXTILES AND OTHER SPECIAL WASTES

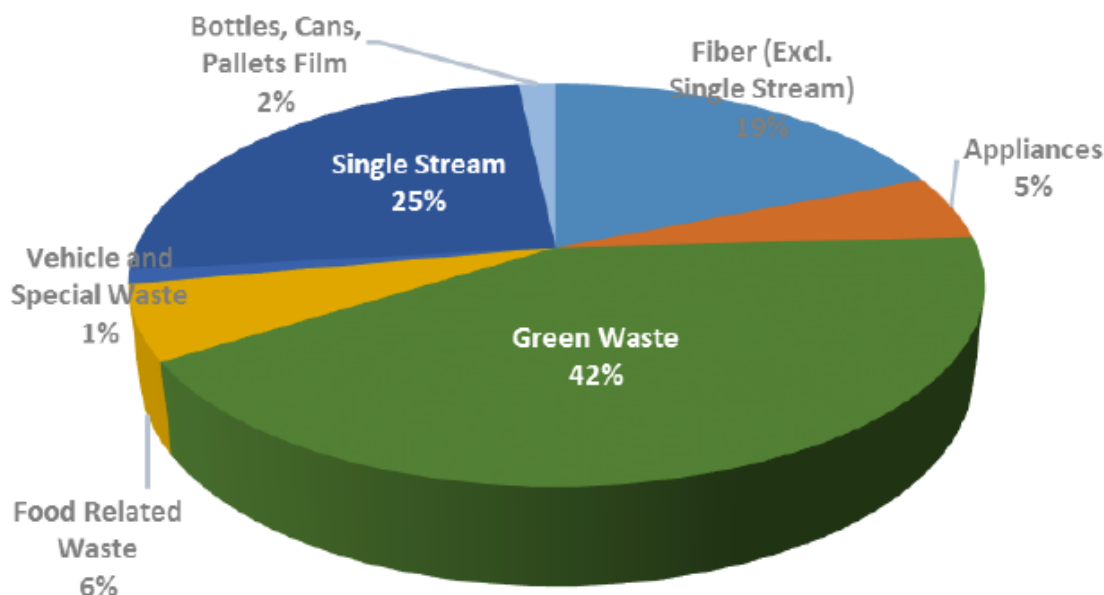
Textile recycling is also underreported in Delaware (and many other states). This is because DSM has relied primarily on the Salvation Army, Goodwill and DSWA for estimates of textile recycling. However from 2000 to 2012 the volume of textile recycling has almost doubled at the national level, with many more players entering the marketplace. The Secondary Materials and Recycled Textiles Assoc. (SMART) represents those businesses that collect, process and market textiles globally. DSM is working with the Executive Director of SMART to attempt to better represent textile recycling in Delaware.

In addition, while carpet recycling was not reported by those businesses that have been involved in this activity in the past, DSM is following up with companies involved in renovations and construction of LEED buildings and in demolition and salvage in order to capture carpet recycling activity that may be occurring outside of MSW recycling activity. In addition, in doing this additional research, DSM has identified one new company that is participating in carpet recycling in CY 2013 that was identified as MSW recycling.

SUMMARY

Figure 2, below illustrates the breakdown of MSW materials recovery, by material type, for Delaware for 2013, including DSWA recycling activity. Figure 2 emphasizes the growing role of single stream recycling and leaf and yard waste composting in materials recycling in Delaware.

FIGURE 2: MATERIALS RECOVERY BY GENERAL MATERIAL CATEGORY INCLUDED IN EPA DEFINITION OF MSW RECYCLING (STATE OF DELAWARE, CY 2013)



RESIDENTIAL VS. COMMERCIAL RECYCLING ACTIVITY

DSM estimated the percentage of each material recycled and classified as MSW generated by a residential as opposed to a commercial source. These allocations are shown in Summary Table 3, below.

While in some cases the source of the material was clear, in others DSM was required to make our best professional judgment as to the source of the material. Since EPA does not attempt to quantify residential and commercial recycling separately, generally acceptable guidelines for allocation of materials recycling to the residential and commercial sector are not available.

In other cases, DSM has worked with RPAC in past years to agree upon acceptable allocations of materials recycling to the commercial and residential sectors. For example, 90 percent of all of white goods are reported as residential recycling.

Leaf and yard waste totals have been allocated as 8 percent commercial with the balance residential consistent with the 2004 survey of yard waste generators and processors.⁴ Trees and branches have been allocated as 11 percent commercial, and the balance residential, consistent with the same 2004 survey.⁵ However, as mulchers and composters have become more accurate in their reports, the allocated percentages consistent with the 2004 survey may no longer be accurate.⁶ This information is expected to be updated through another landscaper and mulcher survey in 2015 and may change the allocations moving forward, as well as can be used to adjust the allocations used in this CY 2013 report if necessary.

It should be noted when reading Table 3 that in the past significant amounts of newspaper, corrugated cardboard and mixed paper generated by residential sources were reported separately by DSWA, while now all paper, with the exception of a declining stream of separated cardboard, collected by DSWA is a single stream of paper and containers and reported under “packaging”. This makes year to year comparisons of paper recycling in this report and in aggregate more difficult.

TABLE 3: ESTIMATE OF RESIDENTIAL VS. COMMERCIAL MSW RECYCLING ACTIVITY (CY 2013)

Material Category	Residential (tons)	Commercial (tons)	Total MSW (tons)
Paper			
Corrugated (OCC)	8	59,676	59,684
Newspaper (ONP)	0	2,824	2,824
Sorted Office Paper	12	5,763	5,775
Mixed Paper	6	15,323	15,328
Subtotal:	25	83,586	83,611
Packaging			
Glass	0	170	170
Plastic Film / Shrink Wrap (1)	0	601	601
Plastic Containers	0	118	118
Aluminum Cans (2)	1,080	1,197	2,277
Pallets	0	4,278	4,278
Mixed Recyclables (3)	88,283	22,515	110,799
Subtotal:	89,363	28,880	118,243
Vehicle Waste (4)			
Tires	1,781	445	2,226
Lead Acid Batteries	2,777	694	3,472
Oil Filters	362	90	452
Subtotal:	4,920	1,230	6,150
Special Wastes			
Carpet	0	140	140
Textiles (5)	2,188	0	2,188
Florescent Bulbs	0	19	19
Other Batteries	78	8.7	87
Electronics (6)	1,202	1,418	2,620
Subtotal:	3,468	1,586	5,055
Food Related Wastes			
Fats, Oil, Grease	0	8,802	8,802
Food Waste	30	17,595	17,626
Subtotal:	30	26,397	26,428
Green Waste			
Leaf and Yard Waste (7)	111,793	9,721	121,514
Trees and Branches (8)	50,033	9,092	59,125
Clean Wood	18	4,738	4,756
Subtotal:	161,843	23,551	185,394
Metals			
White Goods (9)	20,672	2,297	22,968
Subtotal:	20,672	2,297	22,968
Other			
Mixed Plastics (10)	6	2,645	2,651
Subtotal:	6	2,645	2,651
Total:	280,328	170,172	450,499

TABLE 3 NOTES (NUMBERS MAY NOT ADD DUE TO ROUNDING):

- (1) Includes retail bags returned as part of grocery and retail recycling programs.*
- (2) Aluminum can recycling includes those cans reported by scrap dealers at an estimated 50% residential and 50% commercial.*
- (3) Single stream recycling through Wilmington and other municipalities assumed to be 100% residential. All other single stream recycling reported was estimated as residential and commercial by the reporting entity including haulers and processors. Consistent with past reporting, the total tons reported include any residue which has been estimated at 10%.*
- (4) All vehicle wastes recycled are assumed to be 80% residential and 20% commercial. This is consistent with past reporting. Reported source of tires was 80% cars by one major tire recycler.*
- (5) All textiles are considered residential consistent with past reporting. The documented source of textiles is unknown, however DSM assumes most textiles came from residential sources. Also textiles reused are excluded under EPA but included here since reuse versus recycling cannot be determined.*
- (6) Electronics collected by DSWA are assumed to be 70% residential, and all other electronics assumed to be 100% commercial consistent with past reporting.*
- (7) Leaf and Yard waste allocations were made using the same percentage used in previous DSM reports.*
- (8) Trees and branches waste allocations were made using the same percentage used in previous DSM reports, with the exception of one report which was counted as 100% commercial.*
- (9) White goods collected by DSWA assumed to be 90% residential and 10% commercial. All other white goods collected by scrap metal recyclers and retailers assumed to be 100% residential consistent with prior reporting.*
- (10) Mixed plastics are assumed to be 100% commercial consistent with past reports, with the exception of polystyrene which is also included under mixed plastics and assumed to be 100% residential.*

⁴ This 2004 report surveyed landscapers and other generators or processors of yard waste, brush and tree waste and found roughly 8 percent of leaf and yard waste and 11 percent of tree waste was stated to be from commercial sources.

⁵ Except for one industry reporting tree waste that was clearly commercial and was counted as such.

⁶ The table below compares the allocated percentage used in past years and in CY 2013 to the reported percentages calculated from CY 2013 survey reports. Survey reports from green waste processors may not be accurate because they do not collect information from those that deliver green waste as to the source (residential vs commercial). The difference between the reported and allocated percentage have a significant impact on the residential and commercial recycling rates, but do not impact the overall State Recycling Rate.

Sector	YARD WASTE		TREES AND BRANCHES	
	<i>Allocated</i>	<i>Reported</i>	<i>Allocated</i>	<i>Reported</i>
Residential	92%	57%	89%	17%
Commercial	8%	43%	11%	83%

CALCULATING THE RECYCLING RATE FOR DELAWARE

CALCULATING THE DENOMINATOR

To determine total disposal in Delaware for CY 2013, DSM collected data from DSWA and from out of state disposal facilities and instate generators that used WTE as opposed to landfilling.

DSM also reviewed all scale data kept by DSWA on deliveries to the three landfills and three transfer stations during CY 2013.

DSM then followed these steps to disaggregate construction and demolition waste and estimate total municipal solid waste disposal in Delaware as well as to allocate MSW disposed to the residential and commercial sector were as follows:

First, DSM obtained CY 2013 data on deliveries of solid waste to each of DSWA's transfer stations and landfills. This included data on whether the waste was classified as municipal solid waste or construction and demolition wastes (C&D) at each DSWA facility.

Second, DSM obtained data on the quantity of solid waste delivered by vehicle type to each DSWA facility (e.g. front end loader, rear end loader, side loader, roll-off, pick-up truck). Using 2011 survey data on the typical source of waste by vehicle type coming into each facility, DSM allocated total waste tonnage for the year 2013 for each vehicle type to residential, commercial, C&D or self-haul categories.

Third, DSM totaled residential, commercial, C&D and self-haul quantities for each facility calculated by the vehicle type allocations made, and from this calculated total tons of residential, commercial, C&D and self-haul waste delivered statewide for 2013.

Finally, the self-haul total (estimated at 7.6 percent of total deliveries using the vehicle allocation method described above) was allocated equally to residential, commercial and C&D sources consistent with past facility surveys. Table 4-1 and 4-2 show these steps.

TABLE 4-1: SELF-HAUL, RESIDENTIAL, COMMERCIAL, AND C&D WASTE DELIVERIES TO DSWA FACILITIES BASED ON VEHICLE TYPE (CY 2013)

DSWA Facility	Waste, By Generator Type, 2013				Total
	Self Haul (tons)	Res (tons)	Com (tons)	C&D (tons)	
NSWMC	14,517	132,474	144,521	31,153	322,665
CSWMC	6,967	36,262	30,222	6,013	79,464
SSWMC	17,613	23,285	34,980	48,314	124,192
PTCTS	3,405	39,990	31,303	4,233	78,931
MTS	2,244	18,598	10,411	644	31,897
RTSTS	6,988	47,427	18,201	420	73,036
Total:	51,735	298,036	269,637	90,778	710,185

TABLE 4-2: REALLOCATION OF SELF-HAUL WASTE TO RESIDENTIAL, COMMERCIAL, AND C&D SECTOR TO ESTIMATE TOTAL RESIDENTIAL AND COMMERCIAL WASTE DELIVERIES TO DSWA FACILITIES (CY 2013 & CY 2012 COMPARISON)

SECTOR	Total, From Above (tons) 2013 (tons)	Reallocation of Self- haul Deliveries 2013 (tons)	TOTAL 2013 (tons)	From 2012 Report 2012 (tons)	Reallocation of Self- haul Deliveries 2012 (tons)	TOTAL 2011 (tons)
Residential	298,036	17,245	315,281	279,840	16,879	296,719
Commercial	269,637	17,245	286,882	260,608	16,879	277,487
C&D	90,778	17,245		74,442	16,879	
Self Haul	51,735			50,637		
Totals:	710,185	51,735	602,163	665,527	50,637	574,206

CALCULATING THE RECYCLING RATE

In addition to the estimated 602,163 tons of municipal solid waste disposed, there was another 21,300 of primarily commercial waste was disposed at out-of-state facilities.

Using totals from Table 3 for residential and commercial recycling activity in the numerator and the results of Tables 4-1 and 4-2 in the denominator, and then adding 21,300 tons to the commercial sector, the residential and commercial recycling rates are calculated along with the State's MSW recycling rate as a whole as shown in Table 5.

TABLE 5: CALCULATION OF RESIDENTIAL AND COMMERCIAL RECYCLING RATE, AND THE TOTAL MSW RECYCLING RATE (CY 2013)

Sector	(A) Recycling (tons)	(B) Disposal (tons)	(C) Other Disposal (tons)	(B) + (C) Total Disposal (tons)	A / (A + B + C) Recycling Rate (%)
Residential	280,328	315,281	0	315,281	47.1%
Commercial	170,172	286,882	21,300	308,182	35.6%
Total MSW:	450,499	602,163	21,300	623,463	41.9%

Appendix D. Outreach Examples

Figure D.1 – “Delaware Recycles” Logo, used to unify and brand outreach efforts



Figure D.2 – Website: www.recycling.delaware.gov



What's New

All commercial businesses in Delaware must take part in a comprehensive recycling program. Universal, comprehensive recycling is required by Delaware state law. This includes for profit and not-for profit retail and wholesale stores, offices, food service establishments, warehouses, and other manufacturing, industrial, or processing activities. And it includes institutions such as social, charitable, educations, health care, professional, and government services.

Waste haulers are required to provide single-stream recycling collection to both single and multi-family residential customers, and most bars and restaurants. The goal of the Universal Recycling Law is to maximize the convenience of recycling and minimize the amount of trash disposed in Delaware. Recycling keeps raw materials in the manufacturing sector, creates jobs, and promotes sustainability.

- [Letter to Businesses, Organizations, and Municipalities Regarding Universal Recycling \[PDF\]](#)
- [Click here for information on recycling grant opportunities, commercial recycling toolkits, and information by topic.](#)

More Information

- [12th Annual Report of the Recycling Public Advisory Council \[PDF\]](#)
- [Recycling Info by Topic](#)
- [Contact Us](#)
- [DSWA List of Residential Waste Haulers](#)
- [What's Recyclable in Delaware](#)
- [Universal Recycling Legislation](#)
- [Bottle Fee Info for Retailers](#)
- [Yard Waste Information](#)
- [How to Recycle Guide \[PDF\]](#)



Figure D.3 – Facebook Page: www.facebook.com/delawarerecycles

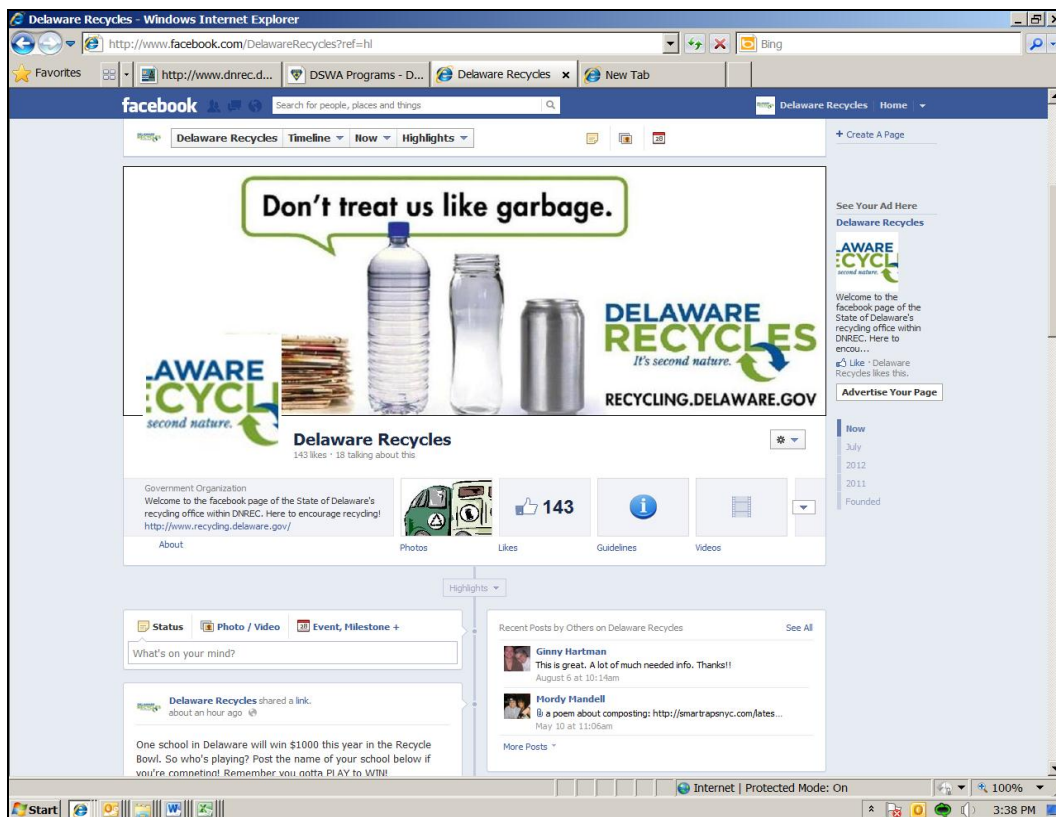


Figure D.4 – How to Recycle Guide - 2014

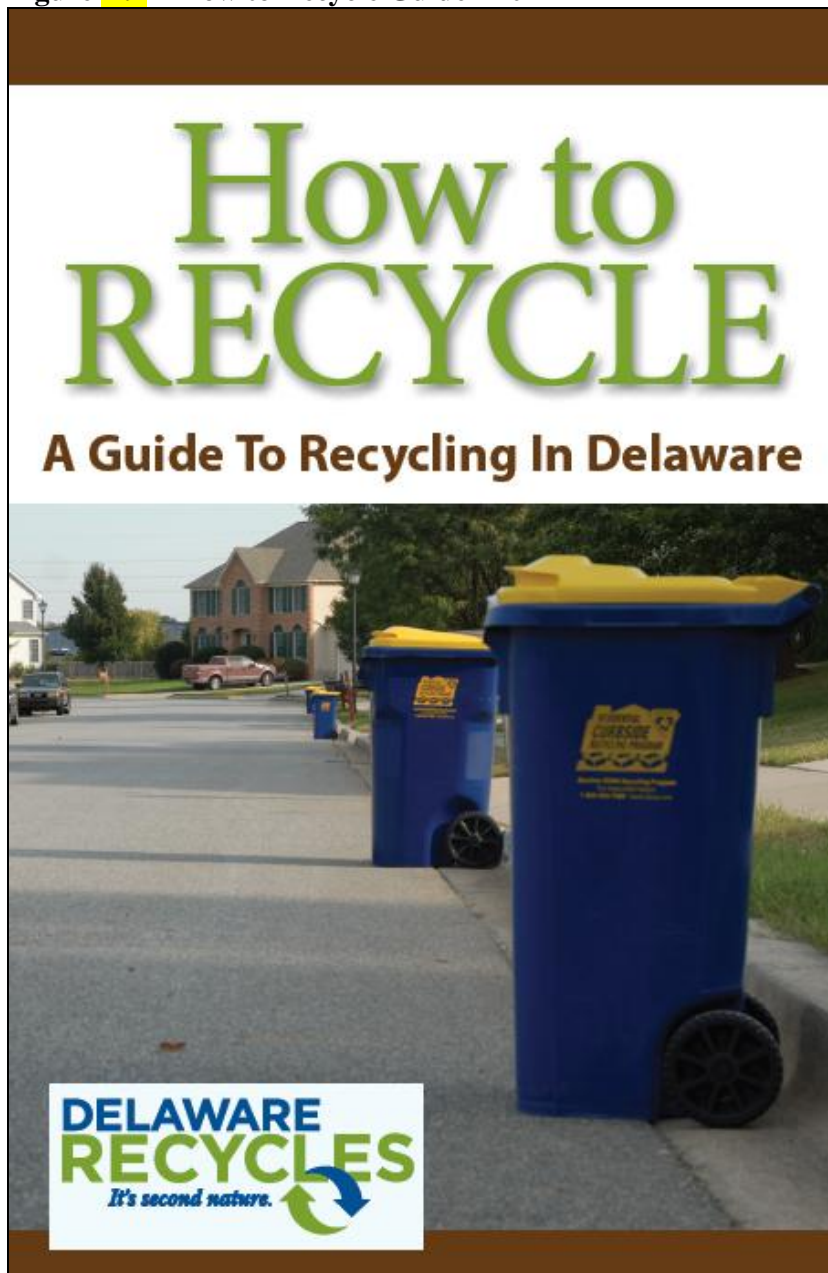


Figure D.5 – Composting Brochure



Appendix E. Background of Recycling Efforts in Delaware

The State of Delaware first began promoting recycling in 1975 with the passage of the Delaware Solid Waste Authority's enabling legislation. This led to the opening of the Delaware Reclamation Plant, which held the title of the largest recycling/reclamation project in the world for nearly 11 years. About 2.5 million tons of municipal solid waste and 0.5 million tons of sewage sludge were processed through this plant. This facility was shut down in 1993 and the plant was modified to operate as the Delaware Recycling Center which processes and markets all the recyclables from the 'RECYCLE DELAWARE' Drop-Off Program.

The next major milestone was the implementation of the Beverage Container Law in 1979 designed to prevent roadside littering.

In 1990, the statewide drop-off recycling program, known as 'RECYCLE DELAWARE', was established by the Delaware Solid Waste Authority. The DSWA 'RECYCLE DELAWARE' centers peaked at 170 sites collecting approximately 34,000 tons per year of recyclables and as of this year (2014) are down to 75 sites collecting approximately 19,000 tons per year. Recyclables collected include brown, green and clear glass bottles, plastic bottles, newspaper and magazines, aluminum and steel cans (including aerosols), textiles, motor oil and oil filters, corrugated cardboard, and household batteries (the batteries are not recycled, but disposed of properly).

Despite these recycling milestones, Delaware's former Governor, Thomas Carper, received frequent letters and phone calls from Delaware residents requesting implementation of curbside collection of recyclables. These requests spurred Governor Carper to call a meeting in late 1998 with representatives of the DNREC, the Delaware Economic Development Office (DEDO) and the DSWA to discuss the feasibility of implementing curbside collection of recyclables in Delaware. The result of this meeting was the issuance of Executive Order No. 60 establishing the Citizens' Work Group on Recycling to evaluate recycling in Delaware. The work group would also recommend ways to increase recycling in Delaware.

In the spirit of conservation and pursuant to the report "A Course of Action to Increase Recycling in the State of Delaware," which was developed by and contained the recommendations of the Citizens' Work Group on Recycling, Governor Thomas R. Carper signed Executive Order Eighty-Two which:

1. Established the goal of a thirty (30) percent diversion rate for recyclables from Delaware's residential solid waste stream.
2. Required the Department of Natural Resources and Environmental Control (DNREC), Division of Air and Waste Management (DAWM) to work in concert with the Delaware Solid Waste Authority (DSWA) and the Recycling Public Advisory Council (RPAC) to:
 - a) develop a method for measuring recycling,
 - b) establish a recycling grant program,
 - c) establish a public outreach and education program aimed at educating the general public and students on the value of recycling as well as to increase the recycling rate,

- d) provide technical assistance to local entities to increase the recycling rate, and
 - e) provide administrative support to the RPAC.
3. Established the nine (9) member RPAC and tasked the RPAC with:
- a) advising DNREC and DSWA on all aspects of recycling,
 - b) advising DNREC on developing grant criteria,
 - c) advising DNREC and DSWA on outreach activities to increase recycling, and
 - d) developing an annual report due on December 1st of each year detailing the status of recycling activities within Delaware.

Governor Minner appointed the members of the RPAC early in her Administration and the first RPAC meeting was held on February 27, 2001. DNREC also hired an Environmental Scientist and a Community Relations Officer to assist the Council. The Environmental Scientist aided the Council in developing the method for measuring recycling and provided recycling technical assistance to Delaware's communities and local governments.

The RPAC contracted a study on residential curbside recyclables collection in New Castle County. The final report, titled "Evaluation of Enhanced Residential Waste and Recyclables Collection and Processing for New Castle County", was published in 2003 by DSM Environmental Services, Incorporated. The report concluded that curbside collection of recyclables could be done at least as, if not more, cost effectively than trash if the system is properly designed.

In early 2006, Senate Bill 225 (SB 225) was introduced in the Delaware Senate. It established a framework for a statewide curbside recycling system, established a Recycling Fund to help pay for recycling programs, banned yard waste from disposal (providing for development of yard waste management facilities), established statewide recycling goals, and established the RPAC. The Governor's Office, DNREC, DSWA, and the RPAC all supported SB 225. The Bill did pass the Senate with amendments but it was tabled in the House of Representatives.

In October of 2005, DNREC Secretary, John Hughes, established the Solid Waste Management Technical Working Group (SWMTWG) pursuant to a directive from Governor Minner. It was comprised of individuals with technical backgrounds, financial backgrounds, and/or experience with municipal solid waste management systems and technologies. The SWMTWG was tasked to perform a feasibility review of municipal solid waste management alternatives and to recommend a program or programs that would best serve Delaware's municipal solid waste management needs. In April of 2006, the SWMTWG produced a report that recommends the state implement effective source reduction and recycling programs and building a processing facility.

The Citizens Solid Waste Solutions Commission (CSWSC), an organized group of environmentally conscious citizens, also produced a report in 2006. They called for more convenient and cost-effective recycling programs, better processing facilities for recyclables and discards, opposition to incineration, and a more focused recycling agency than the DSWA. They argued that recycling is an issue of resource management rather than one of waste disposal.

The City of Wilmington initiated a single-stream curbside recycling trial for over 6,000 households in the Summer of 2006. The City partnered with RecycleBank, a recycling company based in Philadelphia, to provide the service. RecycleBank provided wheeled recycling containers, retrofitted Wilmington's trucks to service the containers and weigh the material, provided various data reports, and provided outreach and education about the program. Through the RecycleBank program, participating households earned up to \$35 per month in RecycleBank

Dollars which could be redeemed at stores of the customer's choosing. The incentive encouraged residents to recycle and helped Wilmington to divert waste from the landfill. The recycling rate in Wilmington's trial areas went from almost zero to about 35% in about six months. In 2007 the program was expanded citywide.

In September of 2006 Governor Minner signed Executive Order 90, which replaced Executive Order 82 and re-established the RPAC. Executive Order 90 increased the membership of the RPAC by two public members. It also increased the former recycling diversion rate goal from 30% of residential solid waste to 51% of municipal solid waste.

The Cherry Island Landfill permit was renewed in 2006 with language that required the DSWA to ban yard waste from entering the landfill no later than January 1, 2007. After dozens of community meetings, a legislatively mandated delay in the ban, and the opening of three community yard waste demonstration sites, DNREC and the DSWA began enforcement of the ban on January 24, 2008.

House Bill 159 (HB 159) was introduced in 2007 and would have encouraged recycling via a comprehensive recycling grants program while discouraging disposal via a \$3 per ton assessment on landfilling. In May of 2008, HB 159 passed in the House of Representatives but was defeated in the Senate in June of 2008.

Starting in January of 2008, Kent County provided single-stream recyclables collection to residents serviced in their trash districts. This increased the number of Delaware households participating in recycling by over 11,000.

In early 2008, the DSWA converted their recyclables collection programs to single-stream. Participants no longer needed to separate traditional recyclables (i.e. glass bottles, cans, plastic bottles, mixed papers) by material type. As a result, recycling became more convenient and easier for people to participate. Other entities, including some waste haulers, also began to offer single-stream recyclables collection service.

In June of 2009, House Bill 201 was passed by the General Assembly on the last day of session. It essentially repealed the Delaware Beverage Container Law (or Bottle Bill), and removed the deposit and redemption system related to beverage containers. Governor Markell vetoed House Bill 201 in July of 2009, on the grounds that it would have a negative impact on recycling and offered no viable alternative.

In December of 2009, Peninsula Compost Company, LLC completed construction of the Wilmington Organic Recycling Center near the Port of Wilmington. This composting facility is approved to accept and process up to 160,000 tons of yard waste, wood waste, food waste, hatchery waste, and animal bedding into compost annually. (See October 2014 statement)

In February 2010, Governor Markell signed Executive Order 18. This Executive Order set goals in the following categories for the executive branch of state government: energy conservation/efficiency, LEED green building practices, renewable energy, reduced transportation impacts, recycling diversion (75%), and environmentally preferable purchasing.

In April 2010, the DSWA updated its Statewide Solid Waste Management Plan (SSWMP). The SSWMP calls for many waste reduction strategies, several of which required action from government and businesses.

In May 2010, Blue Hen Organics opened a 46-acre composting facility in Frankford to the general public. This facility is approved to accept and process 57,000 tons of yard waste, wood waste, food waste, hatchery waste, and chicken litter into compost annually.

On June 8, 2010, Senate Bill 234 (the Universal Recycling Law) was signed into law. This legislation passed after significant input from many stakeholders and coordination from the Governor's Office. It transitioned Delaware out of a flawed beverage container deposit system into a comprehensive recycling system. It also legislatively created a reformed RPAC.

On January 1, 2011, the Central Solid Waste Management Center (Sandtown Landfill) and the Southern Solid Waste Management Center (Jones Crossroads Landfill) stopped accepting yard waste mixed with trash. DSWA and DNREC agreed to permit conditions that restricted yard waste in July of 2010. All three DSWA landfills now ban yard waste.

By September 15, 2011, all single-family households with household trash collection, and many bars and restaurants, were provided with single stream, curbside recycling collection services.

In December, 2011, DSWA's Board of Directors approved staff to enter into agreements with the recycling company ReCommunity (to recycle municipal solid waste recyclables) and with Revolution Recovery (to recycle construction and demolition recyclables) at the Delaware Recycling Center (DRC) in New Castle.

In January, 2012, the DSWA, in partnership with Dart Container Corporation, began a pilot program to collect clean, #6 polystyrene foam (i.e. Styrofoam) for recycling at the DRC in New Castle. The program expanded to a second collection location at the Milford Transfer Station in February, 2012.

On March 1, 2012, Blue River Resources, LLC was granted a permit to operate a materials recovery facility (MRF) to separate paper, cardboard, plastic, metal, and glass for recycling. The facility is permitted to accept approximately 216,000 tons of recyclable waste materials per year. As of October 2012, the new MRF was 75% operational.

On March 17, 2012, non-profit organization Eden Delmarva launched the REPLENISH project with DNREC's assistance. The Sussex County-based project encourages the recovery of organic materials from 23 local restaurants to produce compost that is used at local farms. The compost fertilizes locally grown produce, which is then marketed back to the restaurants.

In April 2012, Revolution Recovery began accepting construction and demolition materials for recycling at its 42,000-square foot facility at the DRC.

In May 2012, the DSWA announced a 20-year agreement with ReCommunity to operate an automated materials recycling facility (MRF) at the DRC. State-of-the art sorting equipment will be housed in an existing building, and will process recyclable aluminum, plastics, paper, cardboard, tin and glass collected from throughout Delaware.

Spring and summer 2012 showed increased activity and awareness of recycling issues within the General Assembly. Senate Joint Resolution 8 established a strategy committee to study carpet recycling, and to report back to the General Assembly with a 10-year carpet recycling strategic plan. Senate Resolution 24 called for DSWA, DNREC, and the Zero Waste Working

Group develop a plan and proposed legislation to address single-use plastic shopping bags by January of 2013.

Between May 1, 2012 and April 1, 2013 the multi-family grants were completed. The grants funds awarded were for the capital costs of providing multi-family collection equipment and outreach and education materials.

In June of 2013 the grant contracts awarded during the third cycle of grant funding were signed. This grant cycle focuses on commercial recycling and awarded nearly \$1.4 million to a mix of fifteen different municipalities, waste haulers, private businesses and not-for-profit entities.

On May 3, 2013 Carpet Recycling Strategy Committee issued its report called for under Senate Joint Resolution No. 8. In summary, the report concluded the Committee was unable to reach consensus on recommendations on how to increase carpet recycling in Delaware with a goal of having 100% of all carpet removed in Delaware be diverted to carpet recycling. When the full Recycling Public Advisory Committee (RPAC) reviewed this report, it suggested that Delaware revisit the status of carpet recycling in another two years. At this point, Delaware will have better data on carpet diversion and recycling due to the reporting requirements in the Universal Recycling Law and the RPAC will be moving its efforts from residential solid waste to construction and demolition waste.

Between July 2012 and January 2013 the Zero Waste Working Group, which included members that represented industry, retailers, DSWA, DNREC, recyclers, and several environmental groups, met monthly to discuss and to present draft legislation that would lead to more effective plastic bag management in Delaware. The group did achieve consensus on a number of points including: fugitive plastic bags are a problem for infrastructure and wildlife in Delaware and education will be a part of any plan to reduce plastic bag waste. However, the group had divergent views and did not agree on any legislative recommendations. Some members independently lobbied to introduce a bill to continue the At-Store recycling program. This bill passed the House last legislative session and is expected to be introduced to the Senate this coming session.

Between November 1, 2012 and October 31, 2013 nineteen outreach and education training events were held throughout the state in reference to grant opportunities, the implementation of commercial recycling and general recycling outreach and education. For a detailed list of these events see Table 7 in section 6 of this report.

On August 29, 2013 ReCommunity held its grand opening ceremony. The opening of a state-of-the-art Materials Recovery Facility marks a recycling milestone for the State of Delaware. With the opening of this facility Delaware now possesses the capability to separate and market its own recyclables. As a result, not only are the profitability of these valuable resources maximized, dozens of valuable local jobs are also created in the process, and \$15 million in construction costs were added to the local economy. This chapter in Delaware's recycling history is possible as a result of the high diversion of recyclables afforded by the state's Universal Recycling law. ReCommunity and DSWA should be commended for their partnering efforts.

On January 1, 2014 the requirement for the commercial sector to implement comprehensive recycling programs began.

In March of 2014 the grant contracts for the fourth round of grant funding were signed. This cycle primarily funded recycling dumpsters, school dishware conversion, balers and outreach and education expenses. The awardees were a mix of municipalities, waste haulers, private businesses, schools and not-for-profit entities.

In May 2014 RPAC issued a letter to the Members of the 146th General Assembly enumerating several reasons why the legislature should consider requiring DNREC to close the Polly Drummond yard waste demonstration site. The letter cited substantive costs to maintain the site, impact to DNREC grant funds, statewide equity, and the fact that the site negatively impacts private management of this waste stream as sound reasons for closure.

On September 26, 2014 Revolution Recovery, a construction and demolition (C&D) waste recycler located at DSWA's Delaware Recycling Center in New Castle, Delaware, celebrated their grand opening. Revolution Recovery's presence in Delaware affords the opportunity to recycle C&D waste, as opposed to dispose of it, at pricing that is competitive with disposal. By doing so, Revolution Recovery contributes to both the states waste diversion rate by recycling a portion of the C&D waste stream and the state's employment rate by creating jobs.

On October 20, 2014 Peninsula Compost Company, LLC was issued a Secretary's Order requiring closure of its recycling facility. Peninsula Compost Company has placed an undue burden on the quality of life of residents in the City of Wilmington, parts of the City of New Castle and part of New Castle County – particularly those living in close proximity to the facility due to frequent uncontrolled odors. The company has been unable to maintain compliance with DNREC's Beneficial Use Determination permit and therefore required to close. The absence of a composting facility in northern Delaware will negatively impact the state's diversion rate going forward unless and until an alternative outlet for organics is made available.